The Long-Term Impact of Preschool Education on Student Achievement

by

Amy L. Britt

August 6, 2014

A Dissertation submitted to the Education Faculty of Lindenwood University

in partial fulfillment of the requirements for the degree of

Doctor of Education

School of Education

ProQuest LLC.
789 East Eisenhower Parkway
P.O. Box 1346
Ann Arbor, MI 48106 - 1346

The Long-Term Impact of Preschool Education on Student Achievement

Amy L. Britt

This dissertation has been approved as a partial fulfillment of the requirements for the degree of

Doctor of Education

at Lindenwood University by the School of Education.

Dr. Sherry DeVore, Committee Chair — Date: Aug. 6, 2014

Dr. Jeff Hyatt, Committee Member — Date: Aug 6, 2014

Dr. Terry Reid, Committee Member — Date: Aug 6, 2014

Declaration of Originality

I do hereby declare and attest to the fact that this is an original study based solely upon my own scholarly work here at Lindenwood University and that I have not submitted it for any other college or university course or degree here or elsewhere.

Full Legal Name: Amy L. Britt

Signature: Amy Britt Date: 8/6/14

Acknowledgements

The journey to complete this study has been a long and challenging one. I would like to thank my committee, specifically Dr. DeVore, for her support throughout the process. I would like to thank all of my fellow Missouri educators who dedicate themselves to improving education for students in our state each and every day and, without their efforts, data would not have been available for this study. I would like to thank my colleagues at Bakersfield R-IV for supporting me in this effort and providing continual encouragement. Lastly, but most importantly, I would like to thank God and my family. The hours spent physically present, but mentally absent as I worked on this project, are too numerous to count. Thank you to my husband, Wes, for his unending love, support, and encouragement when I simply wanted to give up. I want to thank my daughters Moriah, Lacie, and Larissa for all of your help and encouragement. To my son, Jake, I would like to thank you for the patience you exhibited at such a young age as I worked to complete this process. I am also thankful to my parents for the excellent example of hard work and perseverance that they set for me. I can only hope that my efforts to finish this monumental task result is a positive influence on my children to achieve their goals in life, just as the example my parents set for me has influenced mine.

Abstract

While many studies have been published about the short-term effects of preschool on student achievement, few long-term studies have been completed. The focus of this study was to determine whether students who attended schools that offered preschool demonstrated improved student achievement in communication arts and math in fourth and eighth grades. Quantitative data, including MAP scores for 2010, 2011 and 2012 in communication arts and math, were reviewed. The participants included rural schools with similar demographics as evidenced by membership in Missouri Association of Rural Education. A survey was administered to superintendents of the same schools.

The data revealed that students who attended schools that offered preschool performed higher in only one of the four areas reviewed in this study than students who attended schools that did not offer preschool. This difference was noted in fourth grade math. Results from fourth grade communication arts, eighth grade communication arts, and eighth grade math indicated decreased student achievement for students who attended schools that did offer preschool. While the data show administrators believe preschool is an effective tool to improve student achievement, the results contradict this notion in three of the four areas in this study. These findings are evidence that more research is necessary to determine the effectiveness of preschool as a tool to improve student achievement long-term.

Table of Contents

List of Tables

Chapter One: Introduction

Preschool education has been included in the Missouri education system for several years and in the United States for over 40 years (Barnett, Carolan, Fitzgerald, & Squires, 2012; Ou & Reynolds, 2004). According to Fitzpatrick (2008), "over forty states currently fund preschool programs; over 800,000 children were enrolled nationwide in 2004-2005, …representing a two-fold increase in the number of children in state subsidized preschools" (p. 1). More recently, a 2012 Rutgers study from the National Institute for Early Education Research on the national state of preschool found no change in the number of state-funded preschools (Barnett et al., 2012). Even though the number of states that fund preschool has remained the same over the last decade, the number of children enrolled has risen to 1,300,000 (Barnett et al., 2012).

President Obama encouraged expanding preschool education access across the nation in his Zero to Five plan as a part of the Early Learning Challenge grants in an effort to move toward universal preschool (Burke, 2009; Change.gov, 2009; U.S. Department of Education [USDOE], 2013). In the 2014 State of the Union Address, President Obama (2014) emphasized the need for early childhood education. Even with the national dialogue on early childhood education, to date, only six states have received the Early Learning Challenge grant in the *Race to the Top* application (USDOE, 2014).

The expansion of preschool was also one of the top three priorities set by Missouri's Commissioner of Education (Missouri Department of Elementary and Secondary Education [MODESE], 2010c; 2014). Preschool has been a priority for the

Commissioner, whose goal is to increase student achievement (MODESE, 2010c). In 2014, the MODESE listed increasing preschool programs as one of the objectives in the Top 10 by 20 Initiative (MODESE, 2014).

According to the 2012 Rutgers study, "the 2011-2012 school-year was the worst in a decade for progress in access to high-quality PreK for America's children" (Barnett et al., 2012, p. 5). With the national discussion on the importance of preschool and the recent decrease in access, President Obama included an additional $75 billion for the *Preschool for All* initiative to expand (Office of Management and Budget, 2014). Even though the nation experienced a 38% increase in enrollment, the expenditure per child decreased by more than $400 (Barnett et al., 2012). The President's increase in funding is necessary to bring the United States up to speed with the rest of the world in regards to preschool (Herman, Post, & O'Halloran, 2013).

While state and national dialogue has been focused on expanding preschool, few studies have determined both the short- and long-term impact of preschool on student achievement. Several studies have been conducted on the short-term effects of preschool participation (Education, 2009). A short-term outcome of preschool participation identified in previous studies was better literacy rates in the primary grades, with the most positive indicators in third grade (Education, 2009; Herman et al., 2013; Rose, 2010). Although preschool education provides social and emotional structure for young children, the long-term effect on the achievement of students who attend preschool is to be determined (Bernard, 2009). Therefore, given the lack of research surrounding the long-term impact of preschool education, this study was warranted as timely and necessary.

Background of the Study

One goal of preschool has been to increase school readiness skills. The results of a study by Allen (2009) indicated preschool is an effective tool to prepare students for school. Since increased school readiness has been a goal of preschool, "educators are finding it very important to get to know children and their families much sooner than the first day they enroll for kindergarten" (Sutherland, 2009, p. 1). The USDOE (2008a) identified preschool as "a particular avenue for improving school readiness among young children at risk for school failure" (p. 2). The MODESE (2010b) listed "an increased percentage of children entering school ready to succeed" as an outcome in the Strategic Plan (p. 2). The Texas Department of Education has offered preschool "in order to prepare particular populations of the state's four-year-old children for later school success" (Brown, 2009, p. 5).

While many short-term positive outcomes have been identified, the long-term outcomes warrant further study (Bernard, 2009). Conversely, Burke (2010) stated that there is no evidence to warrant preschool as a tool for long-term student achievement. With these conflicting opinions on the value of preschool as a tool to improve student achievement, further study must be conducted to make a conclusive decision on the impact of preschool for both long- and short-term student achievement outcomes. In this study, long-term outcomes of student achievement of students who attend schools that offer preschool were reviewed. The achievement of students who attend schools that do not offer preschool was also examined and presented.

Significance of the Study

Beginning in 2008 with the economic recession, **s**chools in Missouri faced an unprecedented budget picture (Missouri School Boards Association [MSBA], 2010). School leaders became engaged in discussion on how to best meet the needs of students within the scope of significant budget decreases (MSBA, 2010). In an attempt to address the issue with the public, one public school superintendent posed the idea in an open letter to the editor of the *Springfield Newsleader*: "The future of our children rests on our efforts to organize and reprioritize the investments in education and focus on what matters most" (Kleinsmith, 2009, p. 3).

Since that time, more attempts to reduce school funding has come in the form of Missouri House Bill 253 and Missouri Senate Bill 509 (MSBA, 2014). Both of these bills passed the legislature and would have a significant catastrophic impact on public education (MSBA, 2014). House Bill 253 was vetoed by the Governor, and the state legislature sustained his veto (MSBA, 2014).

Senate Bill 509 also received the Governor's veto, and it is unclear whether the Senate will have the votes to override a gubernatorial veto (MSBA, 2014). These bills are a result of an increasingly difficult climate for public education (Missouri Council of School Administrators [MCSA], 2014). With the push against funding for public education in Missouri, it is imperative administrators put the resources still available into the programs that have the most impact on student achievement; both long- and short-term.

As a result of the discussions on how to address the budget shortfall, schools must focus resources in areas that will result in a positive cost-benefit analysis and provide the

most results for dollars spent (MSBA, 2009). According to President Obama, "for every $1 we invest in these programs, we get back $10" (as cited in Weinstein, 2009). Mr. Obama identified reduced welfare rolls, fewer health care costs, and less crime as categories in which the cost-benefit would be realized (as cited in Weinstein, 2009).

In order to assess the long-term effects of preschool on student achievement, the focus of this study was to examine student achievement as demonstrated by fourth and eighth grade communication arts and math scale scores of students who attend schools that offer preschool compared to the scale scores of students who attend schools that do not offer preschool. The opinions of superintendents regarding the effectiveness of preschool as a tool for long-term student achievement were collected along with information from superintendents regarding components of preschool programs currently in place. The findings of this study may serve to inform school leaders whether or not preschool can be used as a key intervention that results in long-term student achievement.

The overarching goal of this study was to identify how young children are educated, the theories behind how preschoolers are educated, whether preschool is an effective tool to improve student achievement long-term through eighth grade in communication arts and math, whether preschool participation is a cost-benefit for long-term student achievement, and what administrators' views were regarding the effectiveness of preschool as a tool to increase student achievement. Additionally, this study included an inspection of specific theories that have contributed to the way young children are educated in public school preschool programs. Administrator attitudes and opinions were obtained about the effectiveness of preschool participation on student achievement and any potential cost-benefit for preschool participation as a tool to

improve long-term student achievement through eighth grade in communication arts and math.

Conceptual Framework

How young children learn has been a question that is answered in teacher training and preschool planning for many years. The major components of most public preschool programs are based on a few underlying key components: social skills, emotional skills, motor skills, and academic skills (MODESE, 2010c). Sutherland (2009) stated, "it is more than just a desirable outcome, but a fundamental essential, that all children have the opportunity to achieve intellectual, social, and emotional growth along with academic proficiency" (p. 1). The way young children are educated and the theories behind how to educate preschoolers were determined the appropriate conceptual framework for this study to definitively define whether those strategies would endure as effective strategies and lead to long-term student achievement.

The framework for this study was viewed through the lenses of concepts specific to the education of preschoolers: the first concept is that of Constructivism. Preschool education incorporates much of Vygotsky's constructivist approach to learning in the Project Construct curriculum model that is widely used in public preschools today (MODESE, 2010a). The reason for this broad incorporation of the Vygotsky model is that Project Construct is one of the four approved models by Title I (MODESE, 2010a). According to the Constructivist theory, children construct knowledge using others and the environment (Learning-Theories, 2010). Preschools use this concept to provide a rich curriculum and environment from which students can construct knowledge and develop cognitively (Learning-Theories, 2010).

The second concept is the stages of learning. Piaget's theory that students develop in stages and are ready for levels of knowledge at different times is embedded in teacher training (Atherton, 2010). Scope and sequence in preschool curriculum is developed by incorporating the theory that students develop in stages and can comprehend different levels and depths of information in stages (Atherton, 2010). To assess the effectiveness of meeting the needs in *how* young children learn, one must recognize the goals of preschool education.

Preschool serves multiple goals, one of which is to acclimate students to school (Allen, 2009). According to Allen (2009), "most research shows that high quality early childhood education promotes academic success for children" (p. 1). Melhuish (2008) agreed by stating, "preschool improves disadvantaged children's school readiness, educational achievement, and social adjustment" (p. 1161).

Educators in teacher preparation programs recognize that preschool may well be a student's first consistent change of environment from home, which was also noted by Schaefer and Lamm (1994), 20 years ago. Part of this acclimation process includes activities that transition students from exposure to activities and experiences that originates exclusively from home, to those that strengthen social, emotional, physical, and academic skills in a school setting, thereby allowing children to enter kindergarten prepared to learn and subsequently bolstering student achievement (Burke, 2009). When considering goals of preschool, it is reasonable to consider whether this acclimation process results in a degree of readiness for preschool students that can provide long-term increased student achievement.

The major component of how young children learn must include school preparedness as a goal that is not only academic, but a shared primary focus that is also placed on social readiness across all models (MODESE, 2010a). In a work on the study of sociology in schools, Schaefer and Lamm (1994) reported that "schoolchildren are introduced to standards of proper conduct in public life which are quite different from other rules of behavior in their families" (p. 273). Although each model warrants further examination, Marcon (2002) advocated in the follow-up study, "children's later school success appears to have been enhanced by more active, child-initiated early learning experiences" (p. 2). Marcon (2002) further concluded that the students may not have been developmentally prepared for the formalized academic program, thereby slowing the progress of some students.

Preschools were developed around the concept that early learning skills are essential to student growth and development. This idea was embedded into preschool programs to increase the student achievement opportunities of young children. Therefore, a portion of the conceptual framework of this study required a review of the early theories by Piaget and Vygotsky.

Vygotsky and Piaget, two major theorists, wrote extensively about how young children learn (Learning-Theories, 2010). Vygotsky was a Russian psychologist, during the Russian Revolution, who lived from 1896-1934 (Learning-Theories, 2010). Vygotsky's work was not vastly recognized in the West until it was published decades later in 1962 (Learning-Theories, 2010).

Numerous ideas presented by Piaget and Vygotsky have influenced the way young children are educated (Learning-Theories, 2010). Four models of preschool

curriculum are approved by the MODESE (2010a) for use in federal Title I preschool programs (U.S. Department of Education, 2008a). These models are framed from Vygotsky's ideas of constructivism and Piaget's notions of stages of learning. Creative Curriculum, Emerging Language & Literacy Curriculum (ELLC), Project Construct, and High/Scope Perry Preschool are preschool models approved to be used in public school preschool programs funded by Title I to meet the needs of early learners (MODESE, 2010a). Because all preschools that are funded with Title I must use a model that has Piaget and Vygotsky's theories of student development embedded, the resultant data would include a significant impact of the theories on preschool curriculum, thereby providing an indicator regarding the effectiveness of the theories toward improving student achievement.

Considering the preschool models that were approved for federal funding had Piaget and Vygotsky's historical theories embedded, the importance of examining the impact of these theories on the short-term and long-term impact of preschool participation on student achievement cannot be discounted. Studies on the short-term impact of preschool on student achievement are documented (Allen, 2009; Herman et al., 2013). This study, however, examined the effectiveness of preschool as a tool to improve long-term student achievement in fourth and eighth grade in communication arts and math.

Statement of the Problem

Do students who attend schools that offer preschool demonstrate increased student achievement over time compared to students who attend schools that do not offer preschool? A short-term effect of preschool participation in previous studies included

better literacy rates in the primary grades, while the study by Rose (2010) indicated the largest gains were in third grade (Herman et al., 2013). Even though the researchers in the previously mentioned studies indicated an increased level of student readiness in the early grades, the long-term effect on the achievement of students who attend preschool is yet to be determined (Bernard, 2009).

Burke (2010) concluded that preschool has no lasting impact on student achievement. Additionally, Burke stated that the lack of evidence supporting preschool as a tool for long-term student achievement makes preschool an unnecessary tax payer burden (Burke, 2010). With these conflicting studies, further study is not only warranted, but necessary to determine the true impact of preschool on long-term student achievement.

Purpose of the Study

The study of preschool participation to determine the impact on long-term student achievement is necessary to inform educational leaders. Student success and achievement are the ultimate goals of education, as referenced in the MODESE's (2010b) mission statement: "To guarantee the superior preparation and performance of every child in school and in life" (p. 2). In the educational and financial climate, programs and student services must be evaluated to prove or disprove the impact on student achievement in an effort to determine the best method of preparing students for success in education and providing students with the most promising platform for achievement (MSBA, 2009).

The purpose of this study was to determine if participation in preschool sustains student achievement over time. Specifically, the purpose of this study was to determine if students who attend schools that offer preschool demonstrate a higher level of

achievement in communication arts and mathematics as demonstrated by fourth grade Missouri Assessment Program (MAP) scores and eighth grade MAP scores than students who attend schools that do not offer preschool.

Research questions. Rose (2010) revealed, in a study on the impact of district-affiliated preschool on student achievement in the initial elementary years, that preschool participation will increase student achievement, particularly in the very early years of education. As students make progress through the educational system, many factors influence student learning, including exposure to effective curriculum (Bernard, 2009). The following research questions guided the study:

1. What are the components present in a district preschool program that lead to sustained or increased student achievement?
2. What are the opinions of superintendents regarding preschool and sustained student achievement?
3. To what extent do the communication arts and math scores of students who attend schools that offer preschool differ from the scores of students in the same grade level who attend schools that do not offer preschool, as measured by fourth grade MAP?
4. To what extent do communication arts and math scores of students who attend schools that offer preschool differ from the scores of students in the same grade level who attend schools that do not offer preschool, as measured by eighth grade MAP?

Definitions of Key Terms

Missouri Assessment Program (MAP). Testing accountability program administered by the state of Missouri (MODESE, 2011b).

Missouri Association Rural Education (MARE). Group from which the sample school districts were chosen (MARE, 2014).

More Knowledgeable Other (MKO). Anyone who has a better understanding of a concept than the learner. This is a portion of Vygotsky's Constructivist theory of child development (Learning-Theories, 2010).

Zone of Proximal Development (ZPD). Theory developed by Vygotsky that identifies the distance between a student's ability to work under the direction of a teacher or with a peer group and the student's ability to work independently (Learning-Theories, 2010).

Limitations and Assumptions

As students grow and advance through the educational system, many forms of instruction and settings will occur (Fitzpatrick, 2008). This study included the assumption that all schools were inclusive of diverse methodologies and teaching styles. These variances present several limitations to the study (Fitzpatrick, 2008).

The following limitations were identified in this study:

Sample demographics. The sample included school districts that were members of the Missouri Association of Rural Education (MARE) and that also offer preschool. Every school district in Missouri does not offer preschool. Resources, such as staff and revenue, are necessary to have preschool in a public school district.

One could reason that districts with more resources, such as personnel and revenue, could offer preschool more readily because larger districts have a broader assessed valuation and student population, hence an increasingly larger revenue stream than districts that have fewer resources. Membership in the MARE only includes rural

school districts with less than 650 students, thus ensuring the sample had a similar enrollment, assessed valuation (because the districts were classified as rural), and state aid.

Cohort tracking. One of the limitations to this study was cohort tracking. Tracking the same cohort of students over the extensive time period necessary to evaluate the research questions was difficult because of student mobility rates. This limitation has been minimized by comparing achievement of students who attend schools that offer preschool with achievement of students who attend schools that do not offer preschool. In considering this limitation, the argument was made that all schools will see a certain rate of student mobility, and because all the achievement rates of schools were included, a more accurate picture of long-term student achievement was obtained. Additionally, one of the questions in the survey completed by administrators was intended to bring information to this limitation to further confirm or negate the impact of mobility on the study.

Instruction variance. Another limitation of this study was the variance in instruction that exists in different classrooms (Allen, 2009). By the end of eighth grade, a student would have been exposed to many teachers, teaching styles, programs, and methodologies. By comparing schools, the assumption existed that all schools were inclusive of diverse methodologies and teaching styles, therefore minimizing this limitation.

Curriculum variations. Teaching methods and prescribed programs vary in each preschool. Only preschools that were a part of a K-12 district in Missouri were included in the study. Private preschools and for-profit institutions were not included in the study.

Because only public school districts in Missouri with a similar demographic population were included, all of the schools would have used one of the four curriculum models approved by the MODESE, thus negating further curriculum variations. Missouri acknowledges only four options for preschool curriculum: High/Scope Perry Preschool, Creative Curriculum, Emerging Language & Literacy (ELLC), or Project Construct (MODESE, 2010a). Because of these requirements, the sample for this study could be considered a limitation since other states may have different preschool curriculums in place.

Instrument. A survey was used to gather data. The survey was created by the researcher. The researcher may not have covered every potential topic that would be necessary to gather enough questions for the participants to provide a thorough answer. The survey was meant to be brief so the participants were more likely to return the survey. Due to the length of the survey, only the questions with the most direct impact on the study were included.

The following assumptions were accepted for the survey:

1. The responses of the participants were offered without bias.
2. The responses of the participants were offered honestly.

Summary

Preschool programs have been offered for many years in a variety of formats. In a 2007 study of the Iowa School Boards Foundation, an information report on the influences of preschool attendance listed four categories of preschool programs: “Early childhood care and education, child care centers, preschool in public education, and child development homes” (p. 2). Because many types of preschools have been in existence for

several years, in today's climate of accountability, schools must seek ways to evaluate programs and determine the value to current and future success of students (MODESE, 2010; MSBA, 2009). This study provided information on the impact of long-term student achievement data of schools that offer preschool and schools that do not offer preschool. Public school preschools provided the most comparable information for the purposes of this study, and only public school preschool data were considered in the data sets of this study.

Historical theories that have laid the foundation for childhood development, as it relates to education and preschool's role in the development of the child to prepare the student for success in school, were reviewed. Piaget and Vygotsky's theories were reviewed through the lenses of essential preschool concepts. Piaget and Vygotsky's theories that are found in today's preschool curriculum were discussed.

In Chapter Two, a review of literature was presented. Historical longitudinal studies were reviewed to identify research that has been done so far on this topic and the implications for preschool today. Current literature regarding the benefits of preschool in relation to long-term student achievement was presented. In order to examine the content fully, eliminate bias, and ensure validity of the findings, current literature regarding preschool strategies that has proven to have no real value were also reviewed. Additionally, related data that could indicate other benefits of preschool were presented. Trends for future program changes recommended in the literature were identified.

The methodology and data phases were detailed in Chapter Three. An analysis of the data was presented in Chapter Four. In Chapter Five, the responses to the research questions were compared and contrasted to the findings from the analysis of the data and

the review of literature. Implications for practice were discussed, as well as recommendations for further study.

Chapter Two: Review of Related Literature

The literature relating to preschool and early student achievement is rich and abundant (Herman et al., 2013; Lee, 2003; Ou & Reynolds, 2004; Promising, 2010). The literature related to long-term student achievement is less available, but the lasting impact of the few studies that have been completed exists today (Bartik, 2012; Lee, 2003; Ou & Reynolds, 2005; Promising, 2010). Forty-year follow-up studies have been conducted from original studies, thus creating a solid historical study that can be tracked to analyze data that have endured over time (Lee, 2003; Ou & Reynolds, 2005; Promising, 2010).

In this chapter, different theories of childhood and student development were presented. Next, the results of three historical preschool longitudinal students were considered. Literature in support of preschool as a long-term student achievement tool was reported. Then, literature in opposition to preschool as a long-term student achievement tool was examined. Finally, any other long-term benefits of preschool were also identified. All the literature in context was summarized to provide a comprehensive review of the theory, historical context, and arguments for and against preschool participation as a tool for long-term student achievement.

Theories in Student Development

Vygotsky's theory. Vygotsky was a Russian psychologist during the Russian Revolution who lived from 1896 to 1934 whose work was "largely unknown to the West" (Learning-Theories, 2010, p. 1; Vygotsky, 1951) until it was published in English in the mid-twentieth century, decades after his death in 1934 (Learning-Theories, 2010; Vygotsky, 1951). Vygotsky developed the theory that children *construct* knowledge (Learning-Theories, 2010; Vygotsky, 1951). Vygotsky's theory is commonly known

today as *Constructivism* (Learning-Theories, 2010). This constructivist approach is embedded in Project Construct, one of the approved preschool models in Missouri (Learning-Theories, 2010; Vygotsky, 1951). Vygotski's (1978) theory of constructivism indicates that "social interaction plays a fundamental role in the process of cognitive development" (p. 1).

Preschool provides a primary environment where students can develop socially. Vygotsky (1978) stated, "Every function in the child's cultural development appears twice: first, on the social level, and later, on the individual level; first between people (interpsychological) and then inside the child (intrapsychological)" (p. 1). Vygotsky identified in his Social Development Theory how young children grow and develop (Learning-Theories, 2010).

Social interaction. The ideas of Vygotsky's Social Development Theory can be best summarized in three categories: "social interaction, More Knowledgeable Other (MKO), and the Zone of Proximal Development (ZPD)" (Learning-Theories, 2010, p. 1). Social interaction is an integral part of the development of children. One can ascertain by this line of thinking that Vygotsky felt social learning was an antecedent to growth and development (Learning-Theories, 2010). Vygotsky's theory laid the foundation for the Constructivist approach that asserts social interaction is what allows children to construct knowledge (Learning-Theories, 2010).

More knowledgeable other. The second part of the theory is the More Knowledgeable Other (MKO) (Learning-Theories, 2010). Specifically, Vygotsky (as cited in Learning-Theories, 2010) stated, "the MKO refers to anyone who has a better understanding or a higher ability level that the learner, with respect to a particular task,

process, or concept" (p. 1). The MKO could be an older person, teacher, coach, peer, younger person, or computer (Learning-Theories, 2010).

Zone of proximal development. Vygotsky's Zone of Proximal Development (ZPD) is the distance between a student's ability to perform a task under adult guidance and/or with peer collaboration and the student's ability to solve the problem independently (Learning-Theories, 2010). According to Vygotsky (as cited in Learning-theories (2010), "learning occurs in this zone" (p. 1). While Vygotsky's theory pointed to social interaction as the prior knowledge and forerunner to learning, Piaget took the approach that learning came before development (Artherton, 2010; Learning-Theories, 2010; Piaget, 2001).

Piaget's theory. Piaget believed learning preceded development and that children learn things in a progressive order (Artherton, 2010; Piaget, 2001). Although some could argue Piaget's thoughts to be too rigid, Piaget was one of the first to designate the stages of learning in age categories (Artherton, 2010; Piaget, 2001). Piaget's stages of cognitive development are evident in how schools prepare students and present curriculum in all grade levels (MODESE, 2010a).

Piaget was a biologist whose study of mollusks influenced his work on child development and stages of learning (Artherton, 2010). Piaget identified a sequence for acquiring skills (Artherton, 2010; Piaget, 2001). The main components of Piaget's development can be organized into four categories (Artherton, 2010; Piaget, 2001).

Sensori-motor. The first stage is Sensori-motor from birth to age two (Artherton, 2010; Piaget, 2001). It is during this first stage that children identify self separately from

others. Children learn to act intentionally during this stage, and object permanence becomes a concept children understand (Artherton, 2010; Piaget, 2001).

Pre-operational. The second stage is called the Pre-operational stage, and is from age two to seven. (Artherton, 2010; Piaget, 2001). According to Atherton (2010), it is during this stage that Piaget deduced children learn to use language and have an egocentric viewpoint. During this stage, children learn to classify objects by a single feature (Artherton, 2010; Piaget, 2001).

Concrete-operational. The Concrete-operational stage is from age seven to eleven years. Concrete-operational is a transitional stage, and it is in this stage when children can think logically about objects or events (Atherton, 2010). Children in this stage can also achieve conservation of number (age 6), mass (age 7), and weight (age 9) (Atherton, 2010; Piaget, 2001). Additionally, the ability to classify objects by several features and order the objects is achieved in the Concrete-operational stage (Artherton, 2010; Piaget, 2001).

Formal-operational. The fourth stage of Piaget's Stages of Cognitive Development is the Formal-operational stage that begins at age eleven (Atherton, 2010; Piaget, 2001). During this final stage, children develop and take on adult-like thinking processes; logical thoughts and responses to difficult situations are developed and problem solving occurs (Atherton, 2010). Additionally, the ability to systematically solve hypothetical scenarios and potential problems are skills obtained in this last stage of development (Atherton, 2010; Piaget, 2001).

Piaget's study of cognitive development has had a major impact on teaching and learning in schools (Artherton, 2010). The cognitive development is the basis for how

students learn (MODESE, 2010.). In his study of cognitive development, Piaget believed that student learning is not a very smooth process of development and that students have certain points at which learning progresses and moves into completely new areas and capabilities (Artherton, 2010, MODESE, 2010a). Piaget's identification of the ages where certain levels of development occur has led to the belief that "children are not capable (no matter how bright) of understanding things in certain ways" (Atherton, 2010, p. 2).

Piaget's line of thinking supports the notion that students are not ready to learn certain concepts at designated ages because students are not developmentally prepared (Artherton, 2010; MODESE, 2010a; Piaget, 2001). This thought has been used as the basis for scheduling the scope and sequence in school curriculum guides (Artherton, 2010). Early childhood educators in Missouri have taken Piaget's thoughts into consideration to align concepts and skills with the cognitive ability of students as evident in the four curriculum models approved by the MODESE (2010a).

Historical Preschool Studies

Although the long-term data relating to student achievement in schools that offer preschool are not abundant, three historic longitudinal studies have been completed in this area. These studies have been followed over time and updated to provide an in-depth study on the subject (Lee, 2003; Ou & Reynolds, 2005; Promising, 2010). Some of the historical studies have been followed for as long as 40 years (Bartik, 2012; Lee, 2003; Ou & Reynolds, 2004; Promising, 2010).

Chicago Child-Parent Center. One historical study, the Chicago Child-Parent Center Study (CPC), was conducted by Arthur J. Reynolds, at the University of Wisconsin (Reynolds, 2005). The CPC tracked students who were born in 1980 and

included 539 disadvantaged minority students (Ou & Reynolds, 2004). A follow-up study was conducted 28 years later to provide information that can be used today to evaluate the effectiveness of the program (Arteaga, Ou, Reynolds, Temple, & White, 2011).

All participants of the CPC were born in 1980 in Chicago (Ou & Reynolds, 2004). The CPC included 24 centers in the poorest neighborhoods in Chicago (Arteaga et al., 2011; Ou & Reynolds, 2004). Each center served 100 to150 three- to five-year-olds, and half-day preschool was offered to three- and four-year-olds (Arteaga et al., 2011; Ou & Reynolds, 2004).

The CPC was operated by Chicago Public Schools (Arteaga et al., 2011; Ou & Reynolds, 2004). Classes were taught by certified teachers (Ou & Reynolds, 2004). Professional development was provided for teachers and assistants that focused on pre-literacy skills (Ou & Reynolds, 2004). All teachers profiled and included in the study had a bachelor's degree and a certificate in early childhood education (Ou & Reynolds, 2004).

The researchers detailed some positive outcomes in the results of the CPC longitudinal study (Arteaga et al., 2011; Ou & Reynolds, 2004). The Chicago Longitudinal Study researchers provided a newsletter that included several years of data in addition to a June 2002 follow-up of the group. In the report based on the findings of the 2002 follow-up, the Chicago Longitudinal Study Newsletter (CLSN) author stated, "Youth who participated in the CPC program (regardless of the amount of time) had higher reading and math scores at age 15 than the comparison group" (Reynolds, 2005, p. 13).

Reynolds further reported in the follow-up newsletter that "by age 18, 14% of preschool participants received special education services compared with 25% of the comparison group" (CLSNa, 2005, p. 2). The researchers also indicated, "23% of preschool participants repeated a grade compared to 38% of the comparison group" (CLSNa, 2005, p. 2). The authors of the CPC study observed, "The most significant outcomes, like high school completion and delinquency reduction, are being driven mostly by preschool" (Lee, 2003, para. 11). Participants in the CPC were "30% more likely to remain in school and finish high school than the comparison group" (Arteaga et al., 2011, p. 2; Lee, 2003, para. 11).

Due to the longevity of the study and the consistent follow-up of the participants, the authors have been able to identify several other findings, not directly related to student achievement, in the CPC study (Arteaga et al., 2011; Ou & Reynolds, 2004). Some positive findings identified in the follow-up include decreased juvenile delinquency rates, parent support of school, student graduation rates, and plans for the future (Arteaga et al., 2011; Lee, 2003). Additionally, researchers revealed that the "preschool participants had a 37% lower rate of juvenile arrest than the comparison group (16.4% vs. 25.9%), and they also had a lower rate of repeat arrests" (CLSNa, 2005, p. 2).

Further findings of the study indicate attitudes about the positive impact of program. Slightly more than 86% of participants' parents were very satisfied with the CPC program; and when the participants were age 12, over 90% of their parents reported that school was important to get a good job, that they liked helping their children with homework, and that they expected their child to go far in school (Arteaga et al., 2011; Lee, 2003). Furthermore, 92% of the participants' parents responded that they liked their

child's school (Arteaga et al., 2011; Lee, 2003). College planning and high school completion rates of the participants and the comparison group were examined, and it was found that 36.2% of the participants expected to finish college (Arteaga et al., 2011; Lee, 2003). By age 22, 61% of CPC participants graduated from high school or earned a G.E.D. (Lee, 2003).

High/Scope Perry Preschool Program. Another study is the High/Scope Perry Preschool Program conducted from 1962 to 1967 (Promising, 2010). The High/Scope Perry Preschool Study included 123 at-risk students (Lee, 2003). The students included in this study were of African American ethnicity, born into poverty, and at-risk of failing in school (Lee, 2003). The students also were three or four years old with IQs between 70 and 85, which is a spread that represents scores that are between one and two standard deviations from the mean (Promising, 2010). Of the study population, 58 were in the program group, and 65 were in the control group (Promising, 2010).

The High/Scope Perry Preschool Study was conducted from October through May from 1962 to 1967 (Promising, 2010). In this program teachers taught 2.5 hours a day and made weekly home visits (Promising, 2010). The student-teacher ratios were 20:1 to 25:1 (Promising, 2010). The participants were assessed annually from ages 3 to 12 and at ages 14, 15, 19, 27, and 40 (Promising, 2010).

The High/Scope Perry Preschool Program was founded upon a Piaget model that emphasizes children as intentional learners who learn best from activities they plan, carry out, and review (Lee, 2003). The High/Scope Perry Preschool model is one of the MODESE approved curriculum models for preschool in Missouri and continues to be used today (MODESE, 2010a). The historical results of the High/Scope Perry Preschool

Program study provide baseline data to demonstrate a researched-based model that is also a requirement for Title I programs (MODESE, 2010a).

Because the High/Scope Perry Preschool Program study was conducted over several years and followed up for 40 years after the completion of the study, long-term outcomes and findings have been established. Promising (2010) indicated that program participants scored significantly higher on nonverbal intellectual performances tests at the end of their first preschool year. Although the control population made gains as well, the updates from the study prove the difference was in age nine when the program group achieved statistical significance, with the program group scoring 89.3 and the control group scoring 84.8 (Promising, 2010).

Further findings from the long-term High/Scope Perry Preschool Study during the early years of education through middle grades included:

- Vocabulary mastery at the end of the first preschool year averaged 74.5% for program participants versus 63.6% of the control group;
- Program participants spent fewer years in special education (16% for program participants and 28% for the control group);
- Program participants spent a higher percentage of all their years of education receiving remedial services, such as speech/language (not special education; 8% for program participants and 3% for control group); and
- At age 14 program participants had a moderate to large higher total scores in all subtests of the California Achievement Test. (Promising, 2010, pp. 3-10)

Participants demonstrated a diverse level of improved academic achievement. The differentiated achievement examples included below represent program participant data listed first, then non-program students:

•Graduated high school 77% vs. 60%;

•Basic achievement at age 14, 49% vs. 15%;

•Homework completion at age 15, 61% vs. 38%; and

•IQ of 90 or higher at age 15, 67% vs. 28%. (Barnett et al., 2005, pp. 2-3)

Social benefits of the High/Scope Perry Preschool Study are widely available from the longitudinal data. The results of the study of the participants at age 27 and again at age 40 were significant. The following reflects the program participant results listed first and the non-program students listed second. The results included:

•Arrest five or more times by age 40, 26% vs. 55%;

•Earned $20,000 or more by age 40, 60% vs. 40%;

•Owned a home at age 27, 27% vs. 5%;

•Owned a home at age 40, 37% vs. 28%;

•Owned a car at age 27, 73% vs. 59%;

•Owned a car at age 40, 82% vs. 62%;

•Owned a second car at age 27, 30% vs. 13%;

•Had a savings account 76% vs. 50%;

•Received social services in last 10 years at age 27, 59% vs. 80%;

•Received family counseling from ages 34-40, 13% vs. 24%;

•Males who raised their own children 57% vs. 30%; and

•By age 40, reported getting along very well with their family 75% vs. 64%. (Barnett et al., 2005, pp. 2-3)

The results of the study regarding criminal behavior are also available. Participants demonstrated a lower degree of criminal behavior compared to non-program students (Barnett et al., 2005). Some of the results regarding drug use and other criminal behavior included:

•Ever arrested for violent crimes 32% vs. 48%;

•Ever arrested for property crimes 36% vs. 58%;

•Ever arrested for drug crimes 14% vs. 34%;

•Arrested for a felony property crime 19% vs. 32%;

•Arrested for a felony drug crime 7% vs. 28%;

•Arrested for dangerous drugs 3% vs. 20%;

•Arrested for assault/battery 19% vs. 37%;

•Arrested for larceny under $100 9% vs. 22%; and

•Served months in prison 9% vs. 21%. (Barnett et al., 2005, pp. 2-3)

The authors of the High/Scope Perry Preschool Program identified a wide variety of lasting benefits of the participants over a long period of time (Barnett et al., 2005). The follow-up studies conducted on the participants and non-program students at age 27 and at age 40 provided in-depth data to draw conclusions about the validity of this model as a cost-benefit to society (Barnett et al., 2005). The authors recognized a $12.90 return to society on each dollar invested in the program (Barnett et al., 2005, p. 4). The authors also recognized that this benefit was primarily in the male participant population, citing

93% of the public return was based on males in the study, while only 7% was based on the public return to females in the study (Barnett et al., 2005, p. 4).

Due to the longitudinal data that resulted from the High/Scope Perry Preschool Study, information is available on the high school and post-secondary academic activities of participants (Promising, 2010). The High/Scope Perry Preschool Study provided information at age 27 of the academic activities of participants (Promising, 2010). Data regarding attitudes toward school and academic achievement in high school included:

> •Program participant students gave a positive response more frequently than control group students on 14 of 16 items measuring students' attitudes toward high school;
>
> •Program participants' high school grade-point-average was significantly higher than the control group (2.08 versus 1.71);
>
> •At age 19 program participants significantly outscored the control group on the Adult Performance Level Survey; and
>
> •By age 27, program participants completed more schooling than the control group (11.9 years for participants and 11.0 years for the control group). (Promising, 2010, pp. 3-10)

Data from the High/Scope Perry Preschool Study included adult information of the participants through age 40 (Promising, 2010). The findings included indicators that result in a higher quality of life for participants in adulthood (Promising, 2010). Several social-economic factors were provided in the longitudinal data (Promising, 2010). Some of those factors included:

•Higher employment rates among program participants were reported (50% of the program group versus 32% of control group);

•The control group spent twice as many months without work since leaving school than the program population;

•Program participants were twice as likely to be economically self-sufficient;

•Program participants were half as likely to be receiving money from welfare at age 19; and

•At ages 27 and 40 program participants had higher average monthly earnings than non-participants. (Promising, 2010, pp. 3-10)

The educational and socioeconomic outcomes listed are not indicative of the totality of the High/Scope Perry Preschool Study (Promising, 2010). Also included in the study were criminal, health, and employment outcomes (Promising, 2010). At age 19, 27, and 40, participants had fewer arrests and were less likely to be involved in violence and gangs (Promising, 2010). Participants were also more likely to have health insurance and seek medical attention, such as preventative services (Promising, 2010). Other long-term advantages of the participants included employment. The authors revealed "at age 40, more program group-males than no-program group males were employed (70% vs. 50%), although at age 27 more program-group females than no-program-group females were employed (80% vs. 55%)" (Barnett et al., 2005, p. 2).

The High/Scope Perry Preschool Study was a longitudinal study that has provided much data not only on academics, but social aspects of participants through 40 years of follow-up study (Barnett et al., 2005). The program consisted of two years of preschool for children from low-income families (Barnett et al., 2005). The program also provided

certified teachers with student- teacher ratios that would be indicative of a special education classroom of 1:8, although up to 10 students were allowed in a classroom (Barnett et al., 2005). The High/Scope model operated five days per week for two and one-half hours per day during October through May (Barnett et al., 2005). Home visits were conducted weekly (Barnett et al., 2005).

There were three models of curriculum tracked in the High/Scope Perry Preschool Study (Barnett et al., 2005). The models included Direct Instruction, High/Scope, and an informal Nursery School Model (Barnett et al., 2005, p. 10). The authors identified various strengths and weaknesses of each model; however, the IQ scores of participants rose approximately 27 points across all three models (Barnett et al., 2005, p. 10).

The Direct Instruction model involved teachers using a script where educators directly taught the children academic skills (Barnett et al., 2005). The teachers praised students for correct answers under this model (Barnett et al., 2005). It is interesting to note that the teachers used a version of Direct Instruction in the 1960s when this study was completed that is different from what is currently viewed as Direct Instruction today (Barnett et al., 2005).

The High/Scope model involved a variety of activities (Barnett et al., 2005). The teachers set up the classroom to facilitate individual, small group and whole-class instruction (Barnett et al., 2005). Additionally, the daily routine allowed children the opportunity to plan, carry out and review their own learning activities (Barnett et al., 2005).

The traditional Nursery School model was loosely structured (Barnett et al., 2005). The teachers responded to students' self-initiated play (Barnett et al., 2005).

Teachers were there to provide a socially supportive setting and safe atmosphere (Barnett et al., 2005).

There are longitudinal data available regarding the differences experienced by the program participants in the three models. The primary indication one can glean from the study of the three curriculum models is the long-term social impact provided by each model. At age 23, participants reported information to be included in the study. The participant responses were broken out by curriculum model.

The responses of the participants at age 23 tracked both academic and social trends. When asked about the treatment for emotional impairment or disturbance during schooling, 47% of Direct Instruction model participants indicated they did have treatment, while 6% of High/Scope Perry Preschool program model participants indicated they had treatment as well as 6% of the Nursery School model participants indicated they had treatment (Barnett et al., 2005, p. 10). The participants were also asked if they participated in volunteer work, and 11% of the Direct Instruction model participants indicated they have volunteered, 43% of High/Scope Perry Preschool program model participants indicated they had volunteered, and 44% of the Nursery School model participants indicated they had volunteered (Barnett et al., 2005, p. 10). It is noteworthy that the type of volunteer work was not specified in the study.

Incarceration incidents were also asked of the participants and tracked by each curriculum model. When asked if the participants were ever arrested for a felony, 39% of the Direct Instruction model indicated they had been arrested for a felony (Barnett et al., 2005, p. 10). The High/Scope Perry Preschool program model participants indicated 10%

had been arrested for a felony, while 9% of the Nursery School program model participants indicated felony arrests (Barnett et al., 2005, p. 10).

There are some results of the curriculum model comparison that do not include all three models in the results (Barnett et al., 2005). Only the Direct Instruction and High/Scope Perry preschool models have participants who reported that various kinds of people give them a hard time (Barnett et al., 2005). Regarding this question, the Direct Instruction model program participants responded at 69%, and the High/Scope Perry preschool program model participants responded at 36% (Barnett et al., 2005, p. 10). Additionally, 31% of the High/Scope Perry Preschool program model participants reported they were married and currently living with their spouse at age 23, while none of the Direct Instruction program model participants reported they were currently married (Barnett et al., 2005, p. 10). With regard to work at age 23, 27% of the Direct Instruction program participants reported they had been suspended from work, while none of the Nursery School program participants reported being suspended from work (Barnett et al., 2005, p. 10).

The responses of the participants by curriculum model indicate a trend away from the old Direct Instruction Model and the loosely structured Nursery School model toward the High/Scope Perry Preschool program model (Barnett et al., 2005). Two reasons for this could be the added structure and diversified methods of the High/Scope Perry Preschool program model. The authors of the follow-up study concluded, “tightly scripted teacher-directed instruction, touted by some as the surest path to school readiness, seems to purchase a temporary improvement in academic performance at the

cost of a missed opportunity for long-term improvement in social behavior" (Barnett et al., 2005, p. 11).

Historical studies: Carolina Abecedarian Study. The third historic study was the Carolina Abecedarian Study conducted from 1972 to 1977 (Lee, 2003). There were 111 at-risk students randomly assigned to two groups (Lee, 2003). The program consisted of 57 children who were continuously enrolled from infancy to age five in a high quality early childhood program, and the control group consisting of 54 children who received no services (Bartik, 2012; Lee, 2003).

The teachers in the Carolina Abecedarian study were school employees; as a result, they were provided professional development and staff salaries based on the school pay scale (Lee, 2003). Free transportation was provided to program participants as well as medical and nutrition services (Lee, 2003). The Carolina Abecedarian program operated five days per week, 50 weeks of the year (Lee, 2003). The Abecedarian curriculum emphasized language acquisition, and each child received individual educational activities (Lee, 2003).

There are additional attributes of the Carolina Abecedarian program (Bartik, 2012; Lee, 2003). The children in the Carolina Abecedarian study included child care from birth to school age (Bartik, 2012). Additionally, Bartik (2012) identified a study conducted by Campbell that incorporated the results of the Carolina Abecedarian study participants at age 21 and made projections through age 30. According to Bartik (2012), the Campbell study projections demonstrated significant increases in earnings and bachelor degrees of participants, which further revealed a case for how those findings are valid.

Although the studies were conducted at different times, similarities in the three studies are abundant, and there are consistent outcomes (Lee, 2003). All three studies included three-and four-year-old students (Lee, 2003). Another finding that was applicable to all three groups in Lee's (2003) report is that "a greater number of children who received preschool services performed better in school than the comparison group. The program group participants were less likely to be held back a grade or placed in special education classes than their respective comparison group" (p. 3). In a review of the follow-up studies, Lee (2003) stated, "the lower rate of grade retention and special education placement can be attributed in part to higher literacy and mathematics skills in the control group" (p. 3). All three studies concluded a higher high school graduation rate for participants versus comparison groups (Bartik, 2012; Lee, 2003).

While there are many similarities in the historical studies, some differences exist. The Chicago Child Parent Center (CPC) participants were disadvantaged minorities (Ou & Reynolds, 2004). Both the High/Scope Perry Preschool Study and the Carolina Abecedarian Study included at-risk students (Bartik, 2012; Lee, 2003).

The number of participants for each study was varied. The CPC study included 539 participants (Ou & Reynolds, 2004), and the High/Scope Perry Preschool Program Study included 123 participants (Bartik, 2012; Lee, 2003). The study with the smallest number of participants was the Carolina Abecedarian Study, which had 111 participants (Bartik, 2012; Lee, 2003; Promising, 2010).

Further differences in the historical studies included hours of operation and calendars. The CPC study provided half-day services during the Chicago Public Schools calendar year (Ou & Reynolds, 2004). The High/Scope Perry Preschool Study provided

services for two and one-half hours per day during the months of October through May (Promising, 2010). The Carolina Abecedarian Study provided full-day services and operated 50 weeks per year (Bartik, 2012: Lee, 2003).

Further demographic differences were noted. The CPC study included 24 centers in the poorest Chicago neighborhoods serving three- and four-year-olds (Ou & Reynolds, 2004). The High/Scope Perry Preschool Program participants were three- and four-year-olds who demonstrated IQ scores between 70 and 85 (Promising, 2010). Participants in the Carolina Abecedarian Study ranged in age from birth to five years old (Bartik, 2012; Lee, 2003).

Literature in Support of Preschool

Some studies have shown that preschool participation can result in long-term student achievement, but further research is necessary to determine the significance of these findings (Lee, 2003). One such study, conducted at Stanford University, identified positive outcomes for fourth graders in math and reading (Fitzpatrick, 2008). In a National Institute for Early Education Research study, outcomes, such as improvements in school success, less grade repetition, and fewer referrals for special education were identified (Barnett, 2008).

The author of the Stanford study of Georgia preschools revealed several benefits of preschool participation (Fitzpatrick, 2008). In the Stanford study, universal preschool was offered in Georgia (Fitzpatrick, 2008). The preschools operated five days per week during the regular school district calendar for six and one-half hours per day (Fitzpatrick, 2008). Georgia preschool was “voluntary, free and available to all children in the state

who turn four by September 1 of the school year, regardless of family income," (Fitzpatrick, 2008, p. 4).

The Georgia preschool program operated in a variety of settings, all of which were approved, including public education, Head Start, private child care, faith-based centers, and non-profit centers (Fitzpatrick, 2008). The teacher to student ratio was required to be 1:10 with a maximum of twenty students in a class, with two teachers (Fitzpatrick, 2008). Georgia preschools were required to utilize curriculum from an approved list, not unlike federally funded preschools in public schools in Missouri (Fitzpatrick, 2008; MODESE, 2010a).

Long-term preschool studies. Additional benefits of preschool have been identified in studies that result in long-term student achievement. In a National Institute for Early Education Research study, Barnett (2008) concluded "well-designed preschool education programs produce long-term improvements in school success, including higher achievement test scores, lower rates of grade repetition and special education, and higher educational attainment" (p. 1). Barnett (2008) also examined a 2008 small scale Milwaukee study, which initially included 53 children, and 40 children participated with long-term follow-up information. Barnett (2008) concluded:

> The effect on reading achievement was 0.68 grade equivalent, or 10 percentiles and math scores were essentially equal for the two groups by age 4. However, there were half as many grade retentions and substantially fewer special education placements for the program group by grade 4. (p. 15)

Long-term preschool participation has linked student graduation rates with school readiness (Education, 2009). Success in mastery of vital skills learned in preschool has

been linked to third grade reading achievement, success in secondary math skills, and a predictor of high school graduation (Herman et al., 2013). The brief by Education (2009) also referenced a 2008 report by the Public Policy Institute of California (PPC) that "identified characteristics of fourth grade students that were highly predictive of their likelihood of passing the California High School Exit Exam (CAHSEE)" (p. 1).

The authors also reported school readiness matters in the long run and that addressing children's developmental needs before and during their first year of school will boost their chances of success (Education, 2009; Herman et al., 2013). Most children, however, do not attend high-quality preschools, and many do not enter kindergarten fully prepared (Education, 2009). The case for a preschool screening tool to identify kindergarten readiness in an effort to prepare students for long-term success was quantified in the study (Education, 2009).

Authors identified several ways to "show examples of knowledge and skills that relate to school readiness" (Education, 2009, p. 3). These examples, adapted from the 2008 Kindergarten Observation Form, developed by Applied Survey Research, included:

•Physical Well-Being and Motor Development

(Performs basic self-help/care tasks, uses tools, such as pencils and crayons, correctly);

•Social and Emotional Development

(Works and plays cooperatively with peers, comforts self with adult guidance);

•Approaches Toward Learning

(Stays focused and pays attention during activities, has enthusiasm for learning);

•Communication and Language Usage

(Engages with books, appropriately expresses needs and wants verbally in primary language); and

•Cognition and General Knowledge

(Recognizes letters of alphabet, counts 10 objects correctly). (Education, 2009, p. 3)

In a May 2009 policy brief for *Children Now*, long-term student graduation rates were linked with school readiness for students who participated in preschool programs (Education, 2009). Another unique factor in the study is that the authors quantified the case for a preschool screening tool to identify kindergarten readiness in an effort to prepare students for long-term success (Education, 2009).

Short-term results of preschool. Support for preschools as a tool for early intervention remains (Bernard, 2009, Herman et al., 2013). Although the null hypothesis was substantiated in 28 of 30 trials in Bernard's study indicating the presence or absence of preschool had little to no impact on MAP scores, Bernard (2009) acknowledged, "…preschool programs do not lack for support, regardless of the perceived success of the programs themselves" (p. 121). Bernard (2009) cited a 2008 study by Walker to indicate the trend that preschool has been viewed as a tool to prepare students for the reading curriculum as they begin school, but now preschools are viewed as a time to prepare students for upcoming math and science content.

The authors of California's Preschool for All Initiative also identified specific gains in reading and applied problem-solving (Rocha, 2006). Rocha (2006) found that "all students in half-day and full-day preschool programs benefitted" (p. 1). Gains were found on cognitive pre-reading and reading, prewriting and spelling, and math reasoning

and problem-solving tests (Rocha, 2006). Specifically, the study found the "greatest impact on scores in three areas: letter and word recognition, spelling, and applied problems" (Rocha, 2006, p. 4). Similar results were identified in the North Carolina More at Four study after the seventh year of implementation (Peisner-Feinberg & Schaaf, 2008). In addition to the similar results, the researchers identified, "One area that showed no changes was problem behaviors, which remained just below the average expected score" (Peisner et al., 2008, p. 3).

World-wide results of preschool participation. Additional data are available on the long-term impact of preschool participation on student achievement from the G-20, or Group of Twenty (Maxwell, 2012). These countries include 19 industrialized countries and the European Union (Maxwell, 2012). Maxwell (2012) cited a study by the Organization for Economic Cooperation and Development which conducted a study of the G-20 nations. One finding that Maxwell (2012) identified was that students who have participated in early-childhood education from the G-20 typically have significantly better individual outcomes at age 15. Maxwell (2012) further acknowledged that while these outcomes are identified for individual students, it is less obvious at the school district level or the national level.

One year versus two years of preschool. While similarities in the outcomes are numerous, differences in outcomes can be found for students who attend one or two years of preschool. Although some research does not differentiate between one or two years of participation, the researchers of the Abbot Preschool Program Longitudinal Effects Study (APPLES) examined the implication for two years of preschool attendance versus one year of attendance (Barnett et al., 2009). In all four identified areas of benefit, the

students who attended preschool for two years performed better than the students who participated for one year (Barnett et al., 2009). Grade retentions for participants in the APPLES program were cut in half compared to the non-program participants (Barnett, Figueras, Frede, & Jung, 2009).

It is notable that the characteristics of the APPLES project were comprehensive and included more benefits than simply additional time in preschool (Barnett et al., 2009). The maximum class size was 15 students (Barnett et al., 2009). Even with small class sizes, all classrooms had certified teachers and a teacher's aide assigned to each room (Barnett et al., 2009).

Comprehensive services and appropriate curriculum were included in the APPLES project (Barnett et al., 2009). There was a focus on "observable classroom quality" in the APPLES project (Barnett et al., 2009, p. 13). The measurement of classroom quality was assessed by an instrument called the ECER-S assessment that produced an observable measure of preschool program practice (Barnett et al., 2009, p. 13).

Researchers at Penn State conducted a 2010 study of the Harrisburg Preschool Program (HPP) (Domitrovich & Greenberg, 2010). The researchers in the Harrisburg study also identified students with two years of participation versus students with one year of preschool participation (Domitrovich & Greenberg, 2010). The researchers reported:

> Students who had enrolled in HPP had significantly higher early literacy and math skills. Those with two years in the program continued to exhibit significantly higher literacy skills both in terms of overall vocabulary level and writing ability,

> compared to children who only received one year of the program. (Domitrovich & Greenberg, 2010, p. 3)

Currently, in the United States, only 4% of three-year-olds attend two years of preschool, while 28% of four-year-olds attend one year of preschool (Barnett et al, 2012).

Studies with universal preschool. In the *Journal of Educational Research and Policy Studies,* in 2007, researchers Lazarus and Ortega (2007) listed three reasons that preschool is important to reducing grade retention and thereby increasing student achievement: "state funded PreKindergarten programs provide parents with affordable, beneficial, and convenient alternatives to day care in terms of transportation and child care; providing high-quality PreK programs to all four-year-olds is critical" (pp. 55-59). The researchers further stated, "universal preschool should be one component in a school system's effort to provide early intervention, in addition to family outreach programs and zero to three educational programs" (Lazarus & Ortega, 2007, pp. 55-59). Lazarus and Ortega (2007) continued, "high quality preschool programs expose children to basic language and print concepts, improve listening skills, and develop additional skills that are precursors to learning to read and write" (pp. 55-59). President Obama (2014) mirrored these thoughts in his announcement to expand access to preschool as a means to improve education and increase student achievement in his State of the Union address.

Preschool as a means to improve the economy. President Obama (2014) identified preschool as a means of improving the economy, in addition to improving student achievement, to level the playing field of all children. Herman et al. (2013) identified preschool as a means to build a globally competitive work force. Barnett and Belfield (2006), in a study of early childhood development on social mobility, presented a

different, yet interesting, argument for public expansion of preschool. In the study, the authors concluded, "if future expansions of preschool programs end up serving all children, not just the poorest, society as a whole would gain" (Barnett & Belfield, 2006, p. 73). The authors of this study further noted that "under current policy three- and four-year-old children from economically and educationally disadvantaged families have higher preschool attendance rates than other children" (Barnett & Belfield, 2006, p. 73). With this argument, Barnett and Belfield (2006) revealed the line of thinking that preschool, as it is now, does not increase student social mobility over time; preschool participation by the economically disadvantaged simply levels the playing field.

Cost-benefit analysis of preschool. However, the authors identified that "benefits would exceed costs and there would be more economic growth, but relative gains for disadvantaged children would be smaller than absolute gains because there would be some (smaller) benefits to other children" (Barnett & Belfield, 2006, p. 73). In an earlier related article, Barnett, Brown, and Shore (2004) pointed out that universal preschool would be of a higher quality because these programs would no longer be "viewed as charity programs, and a broader, more influential cross-section of the nation would have a direct stake in their quality" (p. 10).

Reynolds (2007) presented the results of a study of the cost-benefit analysis of preschool participation at the November 2007 Growth and Justice Conference on smart investments in Minnesota's students. Reynolds (2007) stated, "participation in preschool programs was found to have relatively large and enduring effects on school achievement and well-being" (p. 1). Melhuish (2008) further stated, "the effect of one year of part-time preschool was equivalent to increasing family income by more than $19,000 a year"

(p. 1162). When considering cost-benefit of preschool, Bartik (2006) identified that a three-dollar return for every one dollar invested in preschool is realized in state governments.

According to Bartik (2006) perspective, which was posed eight years ago, the national perspective was even more evident since jobs increased by 1.8%; while earnings, the gross domestic product, and government taxes increased by 1.9%. Overall, this resulted in positive effects that were four times the annual cost (Bartik, 2006). Researchers in a 2006 Michigan study argued, "high-quality early childhood education…can be expected to raise skill levels across the state's workforce and to reduce unemployment and welfare dependency, criminal justice costs and teen pregnancy rates" (Schweinhart & Fulcher-Dawson, 2006, p. 2). Researchers in cost-benefit studies of preschool participation have identified participation as an outcome for higher family income (Melhuish, 2008; Office of Management and Budget, 2014).

There is much literature relating to preschool education. An abundance of literature confirms the assumption that preschool participation prepares children for school and sets the stage for academic achievement (Barnett et al., 2012; Ou & Reynolds, 2004; Herman et al., 2012). Bernard (2009) and Herman et al. (2013) identified positive effects of preschool attendance on social and academic success of children. The longitudinal studies indicate that preschool participation improves academics (Lee, 2003; Maxwell, 2012). The next section of the review of literature contains information regarding the lack of evidence for preschool as a pre-cursor to student achievement.

Literature Finding no Lasting Benefit of Preschool

Although the evidence of preschool participation on student achievement is well-documented, there remains a morsel of doubt in the minds of some. The review of literature that finds no lasting benefit of preschool that follows in this section can be summarized into two very broad schools of thought: those who believe student performance data does not bear out the lasting impact of preschool on student achievement and those who believe public preschool does not give society the greatest cost benefit.

Much disagreement exists about whether preschool can be used as a tool for long-term student achievement. Some educators believe the positive effects of preschool participation diminish by the second grade (Bernard, 2009). Additionally, an Alabama Policy Institute study was conducted on preschool education with mixed results (Fincher, 2008).

Results of the Alabama study indicated little long-term positive impact on all children and only short-term positive impact on low-income children (Fincher, 2008). Bernard (2009) referenced the Alabama study in a 2009 study on student achievement and preschool. Bernard (2009) revealed Fincher's notion of "the fade-out effect" (p. 122) and explained Fincher's idea that positive academic results fade out by fourth or fifth grade.

Preschool already in place with little results. A 2010 study indicated preschool opportunities are already available, and increasing preschool simply puts an undue hardship on taxpayers (Burke, 2010). Burke (2010) further argued against universal preschool because "more than 80 percent of four-year-old children are already enrolled in

some form of preschool program, and enrollment of three-year-old and four-year-old children in school has increased nearly fivefold since 1964" (p. 1).

Burke (2010) further made the case against universal preschool by citing a 2010 study by Muhlhausen and Lips: "Despite significant amount of taxpayer dollars that have been expended on Head Start, a recently released evaluation of the program by the Department of Health and Human Services found zero lasting benefits for children" (p. 7). According to Burke (2010), "a majority of American families already have access to preschool or child care coverage for their children" (p. 7). Another reason Burke (2010) advocated against universal preschool was that "the more generous a taxpayer-funded preschool program becomes, the more difficult it will be for private preschools to compete" (p. 7).

Further making the case against preschool is the 2012 study from Rutgers that revealed the per capita expenditure for students in Head Start are higher than public school preschools (Barnett et al., 2012). Burke (2010) raised additional concerns about the need for preschool including the fact that subsidized preschool creates competition for private preschool, which reduces the overall effectiveness of all preschool in a free enterprise economy. The reduction of private preschool would reduce the quality of programs because the competition would not be there to drive competition by improving quality to attract tuition-paying students (Burke, 2010).

While some studies have indicated a trend of improved student completion, the results of studies for Head Start, the nation's largest preschool program, have been mixed (Ludwig & Phillips, 2008). According to Ou and Reynolds (2004), authors of a review of longitudinal studies, "Head Start has had mixed results" (p. 1). Thomas and Currie (1995)

found pronounced effects on school completion (64.6% participants vs. 58.6% non-participants) and college attendance (25.1% participants vs. 17.6% non-participants) at age 23. However, Ou and Reynolds (2004) acknowledged "other students demonstrated no long-term effects" (p. 1). Additionally, the preschool version of Reading First has also provided mixed results in relationship to long-term student achievement (U.S. Department of Education, 2008b).

The case against universal preschool. While Burke (2010) has thoroughly studied the financial impact of universal preschool, no evidence has been provided about the long-term student achievement. While Burke (2010) did not provide information about student achievement, she raised a question about the need for teacher preparation. Burke (2010) asserted any positive student outcomes were not linked to teacher preparation. After reviewing the research, Burke (2010) concluded researchers had "analyzed seven major studies on the impact of credentialing and educational attainment of preschool teachers on early education quality and the academic development of children" (p. 9). Several studies were cited in the article including one which concluded, "after 50 years of research, we have found no significant correlation between the requirements for teacher certification and the quality of student achievement" (Burke, 2010, p.10).

Limitations to the historical studies. In an earlier report on the topic, Burke (2009) wrote about the limitations to the historical longitudinal studies that support preschool as a tool to increase long-term student achievement. Burke (2009) reported "the limited sample size, concentration of low-income participants, and the home-visitation component limit the usefulness of the High/Scope Perry Project findings in the

preschool debate" (p. 4). Burke (2009) further identified limits to the Chicago program by indicating "the Chicago program worked with 989 disadvantaged children and included a thorough family interaction, health services, parent-resource rooms, and community out-reach activities.

The Chicago program also included speech therapy and meal services" (p. 4). Additionally, Burke (2009) indicated:

> The Abecedarian Preschool project, conducted between 1972 and 1977, was an intensive program including free medical care and social services as well as the individualized plan of educational activities, and social and emotional support. Children participating in the Abecedarian Preschool Project benefitted academically and socially. (p. 4)

Burke (2009) concluded that the success of the students who participated in the Abecedarian study could be attributed to something other than the simple preschool participation, and inferring the additional services provided in these programs could have contributed to the success of the students involved in the studies.

Additionally, all three studies focused primarily on disadvantaged students (Ou & Reynolds, 2004). Burke (2009) argued that the expansion of preschool to become universal was an undue burden on society because disadvantaged students already had access through programs such as Head Start, and the non-disadvantaged students had resources to provide this service, as indicated in the statistic provided by Burke: "80 percent of children in preschool attend early education programs run by private providers" (p. 1).

Cost-benefit analysis and suggestions. Barnett and Ackerman (2006) revealed the costs, benefits, and long-term effects of early care and education programs, and shared recommendations and cautions for community developers. Although long-term benefits for children were identified, Barnett and Ackerman (2006) cautioned, "most studies fail to find persistent effect on IQ. Some, but not all, find persistent effects on achievement test scores. Some find effects on academic success as measured by grade repetition and special education placements" (p. 88). The authors of this study identified limited benefits on long-term student achievement but also recognized the limitations of the studies that provided the benefits (Barnett & Ackerman, 2006). The results of the Barnett and Ackerman (2006) study can best be summed up by identifying some limited benefits of preschool participation on student achievement, but those benefits are questionable and can be mitigated by limitations of the studies.

> Snell (2006) provided similar arguments against universal preschool in California:
>
> This voluntary program would change the current structure of the mixed-provider market that includes a diverse group of public and private preschools into a state controlled monopoly. Universal preschool will expand government provision of education, destroy the private market of preschool, and expand the power of teachers' unions. Taxpayers would be forced to subsidize not only on the poor but also the middle class and the wealthy. There is little empirical evidence to demonstrate any lasting educational to socio-economic benefit of government-run preschool programs. (p. 2)

In this article, Snell (2006) focused on the state of California's economy and how universal preschool, initiated by California's Preschool for All Program, would not have provided the lasting impact to students and would have created an economic burden.

An argument can be made that universal preschool is too expensive and that research does not correlate student achievement with preschool participation (Burke, 2010). Some argue that additional government programs have a significant cost while producing little results. Others point to the Reading First program results as evidence that additional government spending does not produce improved results (USDOE, 2008b). Burke (2010) wrote, "the majority of America's young children already attend preschool—and a new federal program that provides financial incentives for states to expand preschool would become an expensive and unnecessary taxpayer subsidy for middle class and upper-income children" (p. 1).

Some might question whether students from middle to upper income families would suffer adverse effects. The notion that remediation in language or concepts would impose structure that could limit opportunity for free and expressive play has been considered as having potential adverse effects on students from middle to upper income families (Frean, 2008). Many studies suggest any curriculum that does not include creative play for preschool age could be doubtful as a long term benefit (Bernard, 2009). Frean (2008) explained that a negative impact is sometimes felt by boys due to the heavy emphasis on academics at an early age.

Frean (2008) further asserted that forced group type of settings often found in traditional preschools slows children's language development. However, this claim is highly contested by numerous studies and authors in the field of preschool education.

Conversely, a related study indicated, “research shows that high-quality PreK programs can improve language and math abilities of children of all backgrounds,” (Southerland, 2009, p. 18).

Other Findings Not Related to Student Achievement

Additional benefits of preschool participation have been identified (Ou & Reynolds, 2004). One benefit is improved completion rates (Herman et al., 2012; Ou & Reynolds, 2004). In the three historical longitudinal studies mentioned earlier, a few underlying benefits have been associated with all three studies (Ou & Reynolds, 2004). According to two studies, high school graduation rates were improved for all programs (Herman et al., 2012; Ou & Reynolds, 2004). The Abecedarian Project was also associated with a higher rate of four-year college attendance (Lee, 2003; Ou & Reynolds, 2004; Promising, 2010). Although the evidence of high school completion is great, the question could be asked whether preschool participation provides a cost-benefit to society at large.

Additional consideration should also be given to the assessment or screening tools used to indicate school readiness or measure initial gains in student achievement (Allen, 2009). The overriding theme among the major preschool vehicles is school preparedness; however, “a specific assessment for testing readiness skills is lacking for children entering kindergarten” (Allen, 2009, p.1). Although the goals of various models of preschool are similar, the absence of a common screening tool among all programs creates a gap in the evidence of the success of different programs (Allen, 2009).

Even though the programs differ in specific delivery methods, there is not a common screening tool to identify the absolute model that is most effective (Rose, 2010).

Rose (2010), in a study of preschool connectedness, identified "a significant difference in performance between the former district-affiliated program participants and those who spent their PreK years learning primarily in the home environment" (p. 1). To examine whether the goals of preschool toward ensuring student success are being met, Bernard (2009) referred to the need for a common screening tool to ensure valid correlations "if such a tool was available, a clearer correlation between the schools with and without a preschool, and student achievement might be possible" (p. 123).

Summary

In the review of literature relating to preschool's impact on student performance, it was more common to find data to determine the positive impact that preschool has on student achievement than data that determine irrelevance or detrimental effects of preschool participation on student achievement. However, additional study is warranted to track the long-term impact on students participating or not participating in preschool. The impact of long-term student achievement resultant from preschool participation was revealed in the data for this current study.

In Chapter Three, the study methodology was explained. The population and sample used in the study were described. The instruments were revealed, and the relevance of the instruments examined. Data collection and data analysis procedures were presented. Revealed in Chapter Four was the analysis of the data, and in Chapter Five, the conclusions and recommendations for further research were presented.

Chapter Three: Methodology

Previous academic studies have focused on the impact of preschool on student achievement; however, there are few studies on the long-term outcomes of preschool on student achievement (Lee, 2003; Ou & Reynolds, 2004; Promising, 2010). Most studies identify school readiness and improved social skills as positive impacts of preschool (Lee, 2003; Herman et al., 2013; Maxwell, 2012). Furthermore, researchers often list improved math and language arts scores as positive impacts (Promising, 2010).

Problem and Purpose Overview

The purpose of this study was to determine if participation in preschool increases student achievement over time. Specifically, the purpose of this study was to determine if students who attend schools that offer preschool demonstrate a higher level of achievement in communication arts and mathematics as demonstrated by fourth grade MAP scores and eighth grade MAP scores than students who attend schools that do not offer preschool. In order to assess whether preschool participation increases student achievement over time, the opinions of administrators regarding the effectiveness as preschool as a tool to improve student achievement were examined. Additionally, any components present in a preschool program that demonstrated student achievement were considered.

Research questions. The following research questions guided this study:

1. What are the components present in a district preschool program that lead to sustained or increased student achievement?

2. What are the opinions of superintendents regarding preschool and sustained student achievement?

3. To what extent do the communication arts and math scores of students who attend schools that offer preschool differ from the scores of students in the same grade level who attend schools that do not offer preschool, as measured by fourth grade MAP?

4. To what extent do communication arts and math scores of students who attend schools that offer preschool differ from the scores of students in the same grade level who attend schools that do not offer preschool, as measured by eighth grade MAP?

Research Design

Quantitative data were collected to determine if participation in preschool increases student achievement over time. These data, from the MODESE, were gathered to determine to what extent the fourth grade and eighth grade scores of students who attend schools that offer preschool differ from the fourth grade and eighth grade scores of student who attend schools that do not offer preschool. Quantitative data from the MODESE were selected for two reasons: the data are inclusive of all public school districts in the state, and the assessments are standardized tests that hold a uniform measure for all students (MODESE, 2011a; MODESE, 2011b; MODESE, 2011c). To obtain further data, a selected group of educators were asked to complete an online survey. The two sources of data were examined using descriptive statistical methods.

Gathering the data included several steps. First, a list of public school districts that were members of the MARE for the years 2010-2012 was gathered. Second, the quantitative data from all school districts in the state regarding MAP assessments from 2010-2012 in communication arts and math were gathered from the publicly accessible MODESE website. The districts which were members of the MARE and the districts

which were not members of the MARE were disaggregated. These data were analyzed and presented in Chapter Four.

An electronic mail message was sent to superintendents of school districts that were members of the MARE inviting them to participate in the survey. The study was described and assurances of confidentiality and anonymity were presented. Consent to participate was explained, and a link to the survey provided. At the end of 10 days, a reminder via electronic message was sent.

No identifying data on any participant were retained. The survey was created in an electronic survey program called SurveyMonkey. The electronic program generates the responses and organizes the responses into reports, graphs, and tables that can be helpful to efficiently and accurately present the data. The information from the survey was compiled, analyzed, and displayed in tables in Chapter Four. Resultant data from the survey were explained using descriptive analysis.

Population and Sample

The population of the study included all public school districts in Missouri. The participants were the school districts from the MARE. The control group was the school districts that do not offer preschool.

A purposive sample was selected to complete the survey. Fraenkel, Wallen, and Hyun (2012) determined a purposive sample is appropriate for an intended audience. According to Fraenkel et al. (2012), a purposive sample, "….[is] based on [the researcher's] prior information…[and] representative of the population" (p.100). The intended audience would have knowledge about the content and be best suited to complete the survey for a given organization. Superintendents were chosen because of

their level of leadership in Missouri schools. Superintendents, or their designees, were included in the survey because these are the individuals best positioned to provide information and make recommendations or changes once the study is completed.

Instrumentation

Student achievement results from the MODESE were selected for the quantitative portion of the study. These secondary data were chosen because these data were gathered from an instrument assessing all students in the same grade and/or course in the same content areas (MODESE, 2011b). The assessment instrument was the Missouri Assessment Program (MAP) and consisted of grade level exams in communication arts and math in grades three through eight. For the purposes of this study, only grades four and eight in the content areas of communication arts and math were reviewed in the years of 2010, 2011, and 2012.

The standardized assessment instrument was a credible and reliable source of data because of the universal implementation and universal measurement of all students in the state (MODESE, 2011c). The MAP is a nationally normed and referenced assessment. Even though standardized tests have a certain level of error, the results were considered valid because all participant results were compared to this standard of measure. Because of this standard measure, it can be assumed that all results would be subject to the same measure of error over a large population that included an entire state, thereby reducing the limitation of error in standardized tests.

Additionally, the data from the MODESE (2010a) are publicly posted by school district and summarized at the state level. The data consisted of percentage of students whose scale scores fell in the proficient or advanced category in 2010, 2011, and 2012.

Then, the data were organized into two categories: schools that offered preschool and schools that did not offer preschool. Once the data were separated by schools that offered preschool and those that did not, the scale scores of the students who scored in the proficient or advanced range from both categories were compared at the fourth grade level in the content areas of communication arts and math level and again at the eighth grade level in the content areas of communication arts and math and a mean identified.

A five-point Likert scale survey was created for this study. According to research author, Dr. Kumar (2008), a five-point Likert scale is more reliable than other scales because the range of disagreement in the options may make the participant more comfortable to indicate his or her position. The survey (see Appendix A) was developed by the researcher based on information from the literature review. Additional questions were created from examining surveys included in other dissertations on related topics. Once the questions were drafted, the survey was critiqued by a group of doctoral students not involved in the study. The comments from the group were considered, and edits were made to improve the validity of the survey.

Ethical Considerations

Specific school district results were not identified for the purposes of this study; however, to categorize the student performance data correctly, it was imperative to identify which school districts offer preschool and which school districts do not offer preschool. This information is publicly accessible; however, no school district was identified in the study. No information was personally identifiable, nor was any particular school district or school building identified.

There was no monetary benefit or compensation for participation in the study. However, the superintendents who participated in the study have the authority to implement findings. Should the participants feel the results of the study presented information to improve the efficiency and effectiveness in advocating district funds to improve student achievement, the benefit would have been that the participant was aware of this study and had knowledge of how to access the results to inform educational decisions.

There was no risk to the participants in this portion of the study because all information gathered is publicly available on the MODESE (2011c) website. There was little to no risk to the participants of the survey because none of the responses were personally identifiable. The benefit of the survey was the availability of information from which to make informed decisions about preschool programs.

The survey was sent via an online environment utilizing an electronic survey program called SurveyMonkey. During the collection and analysis phases, hard copies of the data were secured in a locked cabinet in the researcher's office. The electronic survey results were secured with a unique username and password only accessible to the researcher. Upon completion all electronic documents were destroyed. The researcher paid for the electronic survey account to be active only during the timeframe of the study. The account was not renewed beyond the timeframe of the study.

Data Collection

Once approval was given from the Institutional Review Board (see Appendix B), the data collection phase began. Data were gathered from the MODESE from all schools in the state to compare fourth and eighth grade math and communication arts MAP

scores. The data consisted of scale scores of students who scored in the proficient or advanced range on the MAP. These scaled scores in the proficient or advanced range were collected and placed in two categories: scores for students who attended schools that offered preschool and scores for students who attended schools that did not offer preschool. Scaled scores in the proficient or advanced ranges were gathered for the years of 2010, 2011 and 2012.

The contact information for the survey participants was gathered from publicly available lists of school superintendents at the MODESE. A letter of introduction (see Appendix C) was distributed via electronic mail to all potential participants with the invitation to complete the online survey. The purpose of the study, the risks of participation in the study, and how the results of the study would be disseminated were included in the discussion to ensure informed consent was given. Participants opened the attachment from the electronic mail to access the informed consent letter (see Appendix D) and survey.

Data Analysis

The quantitative data included scale scores (proficient or advanced) of students who attended schools that offered preschool and the same data criteria were applied to students who attended schools that did not offer preschool. The total numbers of students who scored proficient or advanced in 2010, 2011, and 2012 were analyzed. Using the raw scale scores, the data were averaged and a mean was determined for all three years.

Next, the schools that were members of MARE were disaggregated from the schools that were not members of MARE. The scores of each year, 2010, 2011 and 2012 were averaged for all schools that were members of MARE. Next, the schools that

offered preschool were separated from the schools that did not offer preschool. These secondary data were compared and analyzed to identify communication arts and math trends at the fourth grade and eighth grade for students who attend schools that offer preschool and students who attend schools that do not offer preschool for 2010, 2011, and 2012. The mean (*M*) was identified and reported for the student data.

An analysis was made from the survey responses. The survey utilized a five-point Likert scale to present the data. Survey responses from superintendent regarding the effectiveness of preschool as a tool to improve student achievement, as well as other components of preschool in those districts that impacted student achievement, were presented using descriptive statistical methods.

Tables were included to depict the results of the data. These data were used to detail the student performance results and the mode was identified. Other statistics, such as midrange *(MD)* and median (*Mdn*) were also presented. The mode (*Mo*), the appropriate central tendency measure for the Likert scale survey results, was used to present the data.

Summary

Chapter Three included information about the research design, population, instrumentation, data collection and analysis of the study. The research design included quantitative data from the MODESE. The publicly available scaled scores in the proficient or advanced range of students in fourth and eighth grades in the content areas of communication arts and math were obtained. These data were gathered and compared for students who attended schools that offered preschool and for students who attended schools that did not offer preschool.

The population of the study was inclusive of all public school districts in Missouri. To ensure a similar demographic, the participants were the school districts from the MARE. The control group consisted of the school districts that did not offer preschool.

The instrument selected for the study was an online survey distributed via electronic mail invitation to all superintendents in Missouri who work in schools that are members of MARE. The survey data were gathered via SurveyMonkey, and only the researcher received the results. The anonymity of the participants was secured via the online SurveyMonkey program, and the responses were available solely to the researcher. The SurveyMonkey account was deleted after the research was completed, and no paper copies were kept.

Analysis included a five-point Likert scale to organize the survey responses. Student scale scores in the proficient or advanced categories were totaled for two categories of participants: those who attended schools that offered preschool and those students who attended schools that did not offer preschool. Appropriate statistical analysis was applied. Additionally, tables were used to present data from the survey as well as the data retrieved from the MODESE.

By utilizing both a survey tool and publicly available quantitative statistics, the findings of the study were more comprehensive and provided depth and further detail to the results of the problem identified in the study. Incorporating both publicly available data from three years in addition to a survey tool provided a clearer picture of the current state of the impact of preschool on student achievement. The data gathering and treatment were critical to the adherence to the fidelity of the study and the resultant findings. Using

information and methods identified in this chapter, the data were presented in Chapter Four. The conclusions and recommendations for further study were detailed in Chapter Five.

Chapter Four: Results

The purpose of the study was to determine if students who attended schools that offer preschool exhibit increased student achievement over time compared to students who attend schools that do not offer preschool as measured by fourth grade communication arts and math scores and eighth grade communication arts and math scores.

A survey was used to measure primary data. The survey also provided descriptive statistics from administrators. A purposive sample was chosen to ensure a similar demographic was used. A similar demographic was necessary to make a more accurate comparison of schools and programs, thereby ensuring a more valid study.

Quantitative data including the MAP results for the years of 2010, 2011 and 2012 were gathered. The data were publicly available and published containing fourth and eighth grade communication arts and math scores. Only schools with similar demographics were included in the study. Membership in the MARE required a small student enrollment of less than 650 students. Schools from this demographic were divided into two categories: schools with preschool and schools without preschool. The scale scores of students who scored proficient or advanced for all schools in each category were totaled for both categories (schools with preschool and schools without preschool) and a mean was identified.

There were 361 MARE school districts. Of the 361 MARE member districts, only sixteen school districts had no preschool. This represents only 4% of the total school districts in the MARE. Schools that did not have eighth grade were not included in the study.

Analysis of the Data

Previous historical studies indicated a clear value preschool had in preparing students for school (Bartik, 2012; Lee, 2003; Ou & Reynolds, 2004; Promising, 2010). The purpose of this study was to identify if those short term benefits extend to increase student achievement over time in communication arts and math in both fourth and eighth grades. Specifically, this study sought to determine if students who attended schools that offer preschool and that were members of MARE in years 2010, 2011 and 2012 demonstrated increased student achievement compared to students who attended schools that were members of MARE that did not offer preschool in the same years, grade levels and content areas. Shown in Table 1 are the mean *(M)* of fourth and eighth grade communication arts scores of students who attend schools that offer preschool and scores of students who attend schools who do not offer preschool. The scores referenced in the data are scaled scores in the proficient or advanced ranges on the MAP and represent the average of 2010, 2011, and 2012.

In both fourth and eighth grades in the content area of communication arts, students who attended schools that offered preschool did not demonstrate increased student achievement over time compared to students who attended schools that did not offer preschool. This resultant data were contrary to what is popularly believed in the education world today (Bernard, 2009). There could be other factors that contribute to performance of the students in the schools that do not offer preschool such as potentially lower class sizes in smaller schools that are represented in the population via membership in the MARE. Additionally, the delay in the aggressive nature of testing that is in public schools today adds pressure to teachers and student learning; so students who delay the

formal entry to the testing world could allow for additional time for creative play, deeper constructive knowledge, and thought process and development.

Table 1

Fourth and Eighth Grade Communication Arts Results

	With Preschool	No Preschool
Grade Level	*M*	*M*
4th CA	49.82%	52.38%
8th CA	51.95%	55.70%

Note. *M* = Mean. The results indicated the percentage of students in the proficient or advanced range on the MAP.

Students in fourth grade who attended schools that offered preschool demonstrated increased student achievement compared to students who attended schools that did not offer preschool (see Table 2).

Table 2

Fourth Grade Math Results

	With Preschool	No Preschool
Grade Level	*M*	*M*
4th Math	48.52%	46.19%

Note. *M* = Mean.

However, in the same content area of math, students in grade eight did not maintain that advantage (see Table 3). On the contrary, students in eighth grade who attended schools that did not offer preschool demonstrated increased student achievement compared to students who attended schools that did offer preschool by approximately five percentage points.

Table 3

Eighth Grade Math Results

	With Preschool	No Preschool
Grade Level	*M*	*M*
8th Math	50.95%	55.57%

Note. *M* = Mean.

Overall, when considering the long-term student achievement of students who attend schools who offer preschool to the student achievement of students who attend schools who do not offer preschool, the data indicates an advantage only in fourth grade math. No significant advantage can be identified in communication arts in either fourth grade or eighth grade, or in eighth grade math. Conversely, the data depicts an advantage for the students who attend schools that do not offer preschool in all areas except fourth grade math.

Descriptive statistics from administrators regarding components of preschool programs in the district in which the participants served are shown in Table 4. Several components identified could contribute to increased student achievement; however,

participants did not overwhelmingly single out any response. Two criteria including district-employed teachers and professional development for teachers demonstrated the highest response from participants.

Table 4

Responses from Superintendents

	PreK Components Identified by Superintendents
Criteria Components	*Mo*
Half-Day	58.06%
Full-Day	45.16%
Parent-Paid	29.03%
Certified Teachers	83.87%
District Employed Teachers	87.10%
Professional Development for Teachers	87.10%
Federally Funded	55.88%

Note. *Mo* = Mode.

In Table 5, the participants identified the curriculum model used. Missouri acknowledges four options for preschool curriculum: High Scope, Creative Curriculum, Emerging Language and Literacy (ELLC), or Project Construct (MODESE, 2010a). As indicated earlier in Table 4, 55.88% of the participants identified a component of preschool as federally funded. This means that 44.12% of the participants would be free

to choose a curriculum other than one of the four options. Also, 10% of the participants use something other than one of the MODESE-approved models. Even though 44.12% of the participants could choose something other than one of the MODESE-approved curriculum models, 34.12% still use one of the approved models.

Table 5

Curriculum Models used in Preschools

	Curriculum Models Identified by Superintendents
Curriculum Model	*Mo*
High Scope	0%
Creative Curriculum	10%
Project Construct	66.67%
Emerging Language & Literacy	13.33%
Other	10%

Note. *Mo* = Mode. Other included locally written curriculum.

As shown in Table 6, some districts have operated a preschool for over 15 years. No districts in the study opened a new preschool in the past year. This would indicate that schools that have the resources to offer preschool have already done so, or schools are waiting additional funding to open or expand preschool programs.

Table 6

Preschool Program Longevity

Number of Years a PreK Program Has Been in Operation in the District	
Year Range	*Mo*
< 1 Year	0%
1-5 Years	12.50%
6-10 Years	21.88%
11-15 Years	40.63%
>15 Years	25%

Note. *Mo* = Mode.

The majority of students entering kindergartener attended the district preschool (see Table 7). Considering this graphic, one can estimate that approximately 36% of all entering kindergartners did not attend a district preschool.

Table 7

Percentages of Entering Kindergarteners Who Attended District Preschool

Percentage of District PreK Entering District Kindergarten	*Mo*
<10%	0%
10-30%	9.68%
30-50%	25.81%
50-70%	35.48%
>70%	29.03%

Note. *Mo* = Mode.

Mobility rates for the same cohort are important to identify student achievement over time using historical MAP data. This study used MAP data from 2010, 2011, and 2012. The participants identified the mobility rates for students from Kindergarten through grade eight. In Table 8, mobility rates are displayed for all participant schools. In an earlier discussion in the previous chapter, mobility was mentioned as a limitation to the study. Since all schools experience mobility to some degree, this would negate this limitation to the study.

Table 8

Mobility Rates

Same Cohort from Kindergarten through Eighth Grade	*Mo*
<20%	13.33%
20-30%	23.33%
30-40%	23.33%
40-50%	13.33%
50-60%	10%
>60%	16.67%

Note. *Mo* = Mode.

Free and Reduced Rates of Participants

Participants indicated a variety of free and reduced rates for students to attend preschool. The midrange of the rates was 63%. The median was 64%, while the mean was 61.76%. The participants revealed resultant data indicating multiple modes. This particular data set was multi-modal, with the modes identified as 55%, 57%, 65%, 67%, 70%, and 76%. Because the purposive sample included superintendents of school districts belonging to the MARE, a similar demographic of students and school districts could be expected. Even though the data reflected in the free and reduced rates indicate a range in the rates, the school districts represented by the data share similar enrollment qualifications as established by common membership in the MARE.

The participants were asked two specific questions about preschool and student achievement. The first question, as represented in Table 9, was a basic opinion question about preschool participation as an indicator of long-term student achievement. The second question demonstrated opinions of participants regarding preschool participation increasing the likelihood of early (K-3) student achievement in communication arts and math.

Table 9

Superintendent Beliefs Regarding PreK Participation as an Indicator of Student Achievement

	Long-Term	Short-Term
Criteria	*Mo*	*Mo*
Very High Indicator	44.12%	64.71%
Somewhat High Indicator	50%	35.29%
No Opinion	2.94%	0%
Somewhat Low Indicator	0%	0%
Very Low Indicator	2.94%	0%

Note. *Mo* = Mode. Long-term was identified as beyond third grade. Short-term was identified as PreK through third grade.

Shown in Table 10 are the participant responses regarding the attribution of preschool participation on student achievement in communication arts and math. Grade four is indicated on the left column and in grade eight is indicated on the right column. The data were indicative of superintendents' opinions that preschool participation does

attribute to student achievement by grade four. The majority of the participants attributed preschool participation to student achievement by grade eight as well. The data reflected the opinions of participants that student achievement in grade eight could be less attributed to preschool participation than in grade four. A variety of reasons for this were explored in the findings and recommendations in Chapter Five.

Table 10

Participant Opinions on the Degree of Attribution of PreK on Student Achievement at Fourth and Eighth Grades

	4th Grade	8th Grade
Criteria	*Mo*	*Mo*
Very High Attribution	35.29%	23.53%
Somewhat High Attribution	52.94%	50.00%
No Opinion	8.82%	11.76%
Somewhat Low Attribution	2.94%	8.82%
Very Low Attribution	0%	5.88%

Note. *Mo* = Mode.

Participants provided input regarding the likelihood that preschool provides a cost-benefit to society (see Table 11). Only 3.03% of participants responded that it was somewhat unlikely or very unlikely that preschool provided a cost-benefit to society. Conversely, the vast majority (93.94%) responded that preschool does provide a cost-benefit to society.

Table 11

Participant Opinion on the Likelihood that PreK Provides a Cost-Benefit to Society

Criteria	*Mo*
Very Likely	69.70%
Somewhat Likely	24.24%
No Opinion	3.03%
Somewhat Unlikely	3.03%
Very Unlikely	0%

Note. *Mo* = Mode.

Participants were very likely to believe in the positive short-term impact of preschool participation on student achievement (see Table 12). However, the amount of participants who believed that preschool participation was *somewhat* or *very unlikely* to have a positive impact on short-term student achievement was 14.60% compared to 17.65% of participants who believed it was *somewhat likely*. Overall, the combination of participants who believed preschool participation had a positive short-term effect on student achievement was *very much agreed* or *somewhat agreed* (85.30%). This demonstrates an overwhelming majority of participants attributed preschool participation, in the short-term, to increased student achievement. It is notable that the survey data is somewhat contradicted by the information provided by the participants (as shown in

Table 9) in which the participants were asked about opinions regarding early (preK-third grade) achievement of students who participated in preschool and long-term achievement.

Table 12

Participant Opinion on the Short-Term Positive Effects of PreK on Achievement

Criteria	*Mo*
Very Much Agree	67.65%
Somewhat Agree	17.65%
No Opinion	0%
Somewhat Disagree	8.82%
Very Much Disagree	5.88%

Note. *Mo* = Mode.

The data in Table 13 represent participant opinions regarding the long-term effects of preschool on student achievement. A shift is evident from participants who believe preschool is *very likely* to have a long-term positive effect on student achievement to those participants who believe it is *somewhat likely* that preschool has a positive effect on long-term student achievement. Most notably, a comparison between Table 12 and Table 13 is warranted. In Table 12, only 17.65% of participants *somewhat agreed* that preschool had a positive impact on short-term student achievement, compared

to 41.18% of participants who believed preschool had a positive impact on long-term student achievement. While, 0% of participants *very much disagreed* that preschool participation increased long-term student achievement.

According to a comparison of Table 12 and Table 13, the majority of participants *agreed* that positive short-term and long-term effects of preschool could be attained; however, a much smaller percentage (5.88% on the long-term question) had *no opinion*, or *disagreed* about the positive impact on both short and long-term impacts of preschool on student achievement. Of participants who were asked about the positive short-term effects, 8.82% *somewhat disagreed*, and 5.88% *very much disagreed*. Of the participants who were asked about the positive long-term effects, 5.88% *somewhat agreed* and 0% *very much disagreed*.

Table 13

Participant Opinion on the Long-Term Positive Effects of PreK on Achievement

Criteria	*Mo*
Very Much Agree	47.06%
Somewhat Agree	41.18%
No Opinion	5.88%
Somewhat Disagree	5.88%
Very Much Disagree	0%

Note. *Mo* = Mode.

All participants *agree* preschool is a valuable mechanism for increasing student achievement over time (see Table 14). These data indicated none of the participants disagreed with this question and that all of the participants had an opinion on this question. Even though the participants were asked two previous questions about the degree to which they believed preschool positively impacted both short and long-term student achievement, the time frame in this question was not identified. The participants were simply asked their opinions about the value of preschool as a mechanism to increase student achievement over time. Short-term student achievement was typically viewed as kindergarten through third grade. Long-term student achievement was beyond fourth grade.

Table 14

Participant Opinion on the Value of PreK as a Mechanism for Increasing Achievement Over Time

Criteria	*Mo*
Very Much Agree	64.71%
Somewhat Agree	35.29%
No Opinion	0%
Somewhat Disagree	0%
Very Much Disagree	0%

Note. *Mo* = Mode.

With 79.41% of participants *very likely* or *somewhat likely* to introduce or expand preschool, the data indicated the value participants placed on preschool as a tool to improve student achievement (see Table 15). Whether this value was placed on student achievement data in local districts or a perceived perception is not known. While 2.94% had *no opinion*, 17.64% were *somewhat* or *very unlikely* to expand or introduce preschool as a tool to improve student achievement.

Table 15

Participants to Introduce or Expand PreK as a Tool to Improve Achievement

Criteria	*Mo*
Very Likely	55.88%
Somewhat Likely	23.53%
No Opinion	2.94%
Somewhat Unlikely	11.76%
Very Unlikely	5.88%

Note. *Mo* = Mode.

Data depicted in Table 16 reflects participants' commitment to preschool, but acknowledges when cuts are necessary every program must be considered. While 39.39% of participants would be *very likely* or *somewhat likely* to eliminate preschool, the majority 60.60% would be *very unlikely* or *somewhat unlikely* to eliminate preschool. Also, 0% of the participants had *no opinion* on this matter. In the recent economic

climate it is very plausible that some of the participants may have had to consider this scenario. This may provide an answer as to why every participant had an opinion on this question.

Table 16

If Reductions Were Necessary, Would PreK Be Eliminated?

Criteria	*Mo*
Very Likely	6.06%
Somewhat Likely	33.33%
No Opinion	0%
Somewhat Unlikely	33.33%
Very Much Unlikely	27.27%

Note. *Mo* = Mode.

Summary

The participants in the survey overwhelmingly indicated a belief that preschool participation contributed, in some way, to student achievement. Some of the participants believed that long-term student achievement was improved for fourth and eighth grades students who attended preschool (Tables 9, 10). However, the historical MAP data from 2010, 2011 and 2012 did not support this notion. The study of the MARE school districts that offer preschool and the MARE schools that did not offer preschool indicated

increased student achievement was demonstrated by the students who attended the schools that did not offer preschool.

There was one exception to this summarization of data. The students who attended schools that offered preschool demonstrated increased student achievement in fourth grade math compared to students who attended schools that did not offer preschool as measured by fourth grade MAP scores for 2010, 2011 and 2012. This is one of four areas (fourth and eighth grade communication arts and fourth and eighth grade math) where preschool participation improves student achievement, according to this study.

Participants indicated that roughly two-thirds of kindergartners attended district preschool. Given the resources that are put into preschool, it is reasonable that participants expect a return on the investment and attribute preschool to improved student achievement. The expectation has long existed in studies that preschool prepares students for school (Allen, 2009; Brown, 2009; MODESE, 2010b; Schaefer & Laumm, 1994).

Although the historical MAP data did not support the belief that preschool is a tool to improve student achievement long-term in three of four areas identified in this study, data did support this belief in one of four areas. One of four areas that were studied where data indicated improved student achievement for students who attended schools that offered preschool compared to schools that did not offer preschool was identified. These findings were in fourth grade math.

The other three out of four areas that were studied included fourth grade communication arts, eighth grade communication arts, and eighth grade math. In all three of these areas, student scores were lower for students who attended schools that offered preschool compared to the scores of students who attended schools that did not offer

preschool. At this time, more study is warranted to make a definitive attribution of preschool participation to long-term student achievement. In Chapter Five, a summary of findings is revealed as well as recommendations for further study.

Chapter Five: Conclusions and Recommendations

The purpose of the study was to determine if students who attended schools that offered preschool demonstrated increased student achievement in fourth and eighth grade communication arts and math compared to students who attended schools that did not offer preschool. The results of the study on the long-term impact of preschool participation on student achievement are mixed. Long-held beliefs about the effectiveness of preschool as a tool to increase student achievement have not been upheld by the data in this study. The data further demonstrated there seems to be a disconnection between what administrators believe and what data show.

This study consisted of secondary data and a survey that provided descriptive statistics. The quantitative data consisted of MAP data from the MARE districts for 2010, 2011, and 2012 in the areas of fourth and eighth grade communication arts and math. The survey tool consisted of an electronic survey of the MARE superintendents about their opinions regarding preschool on a variety of issues relating to student achievement.

A set of research questions guided this study. Study results from the resultant data were included for each question. The response to the research questions is provided.

Research Question Findings

1. What are the components present in a district preschool program that lead to sustained or increased student achievement?

The administrator survey provided data that included a host of program components that lead, in the opinions of the administrators completing the surveys, to increased student achievement. These components included certified teachers, approved curriculum models, and professional development for teachers. Some of these same

criteria were also evident in the historical studies discussed in Chapter Two. The CPC, High Scope Perry Preschool School Project, and the Carolina Abecedarian studies all had certified teachers (Lee, 2003; Ou & Reynolds, 2004; Promising, 2010). Additionally, all three historical studies provided professional development for teachers (Lee, 2003; Ou & Reynolds, 2004; Promising, 2010).

A survey was used to gather descriptive statistics from superintendents. Components of preschool programs that were identified in the survey included information shown in Table 4. Although components vary, the majority of preschools have district-employed teachers, professional development for teachers, and teachers who are certified. It is also notable that more schools offer preschool in a half-day setting versus a full-day setting. This could be in an effort to serve more students with one classroom.

Over half of the respondents identified federal funding as a component of preschool. Title I requires one teacher for 10 students, and five more students can be added with a paraprofessional in the classroom. Half-day programs could serve up to 30 students, while a full-day program could serve only 15. It is also notable that less than one-third require parents to pay for preschool. The reason for requiring parents to pay for preschool services would vary by district. Some school district might experience a deep decline if parents were required to pay. However, considering the economic climate in the state over the past four years, some school districts may have had no other viable option if they wanted to continue the program. Considering the demographic population, it is logical that since the districts are rural, transportation could be an obstacle for parents

and some parents may not be able to pay for transportation if transportation were not provided.

2. What are the opinions of superintendents regarding preschool and sustained student achievement?

The survey data were conclusive that administrators believed preschool participation contributed, in some way, to increased student achievement. Moreover, 100% of participants believed that preschool participation was *somewhat* or *very likely* to improve student achievement over time. However; the data indicated only one in four of the identified areas in this study demonstrated increased student achievement. This area of increased student achievement was in fourth grade math. The difference in what administrators believe and what the data show was pronounced.

There could be numerous reasons why administrators believe preschool contributes, even long-term, through eighth grade. Administrators could believe that preschools do a very good job acclimating students for school, and therefore, this early success endures as students grow and move through the educational program. Another notion is administrators in small schools have a better personal knowledge of students, and especially students who have attended the district since preschool.

Lower mobility rates could lead administrators to believe in the effectiveness of preschool as a tool to improve student achievement. The low mobility rate could contribute to the belief that because students have been in the district longer, they perform better. Additionally, in smaller districts, students may be likely to have access to smaller class sizes. Although this study did not seek to find the reasons why administrators believe preschool is a tool to improve long-term student achievement, the

marked difference in what the data show and what administrators believe is an opportunity to open a dialogue about best practices for long-term student achievement.

3. To what extent do the communication arts and math scores of students who attend schools that offer preschool differ from the scores of students in the same grade level who attend schools that do not offer preschool, as measured by fourth grade MAP?

The findings are mixed for fourth grade. In fourth grade, the communication arts average scale scores in 2010, 2011, and 2012 of students who attended preschool were lower than the same score set of students who did not attend preschool. Conversely, the math average scale scores in 2010, 2011, and 2012 of students who attended preschool were higher than the scores of students who did not attend preschool, as measured by fourth grade MAP. Based on survey data from this study, the mixed results were not cohesive with what administrators commonly believed in regard to preschool being an effective tool to improve student achievement.

The results are not insignificant; the difference is only 2.33 points; however, the data does not support that students who attend schools that offer preschool demonstrate increased student achievement in math at the fourth grade level compared to students who attend schools who do not offer preschool. The data negate the notion that students who attend schools that offer preschool perform better than students who do not attend schools that offer preschool in fourth grade students in communication arts. Students who attend schools that do not offer preschool demonstrated increased student achievement in communication arts; those students scored an average of 2.56% points higher than the other group.

4. To what extent do communication arts and math scores of students who attend schools that offer preschool differ from the scores of students in the same grade level who attend schools that do not offer preschool, as measured by eighth grade MAP?

The data revealed a marked difference in the eighth grade. Students who attend schools that do not offer preschool preformed markedly better than their peers who attended schools that did offer preschool, as measured by eighth grade communication arts and math MAP. Again, this resultant data revealed a disconnection between what administrators believe and what the data show.

The data negate that students who attend schools that offer preschool demonstrate increased student achievement compared to students who attend schools that do not offer preschool. In both communication arts and math, students who attended schools that do not offer preschool outscored students who attend schools that offer preschool based on average scale scores for 2010, 2011, and 2012. In both content areas in eighth grade, the scores of students who attended schools that did not offer preschool compared to the scores of students who attended schools that did offer preschool were higher, with communication arts being just over four percentage points and math being just over five percentage points.

Even though the data indicate no significant advantage in the long-term for schools that offer preschool, many schools continue to discuss preschool as a tool for student achievement and seek implementation and expansion (Ou & Reynolds, 2004). The expansion of preschool is evidenced by Missouri's *Top 10 by 20* campaign (MODESE, 2010c). A national discussion has also taken place regarding the role and expansion of preschool in public education, as evidenced in President Obama's *State of*

the Union Address (Obama, 2014). Expanding preschool was also listed in the 2014 United States budget (Office of Management and Budget, 2014).

Conclusions

The quantitative data gathered from the MODESE were contradictory to the survey tool data, as evidenced by the descriptive statistics. In the four areas studied over the three year period including 2010, 2011, and 2012, fourth grade communication arts and math and eighth grade communication arts and math, only fourth grade math scores were higher for the students who attended schools that offered preschool compared to the scores of students who attended schools that did not offer preschool. All other areas, including fourth grade communication arts and eighth grade communication arts and math, resulted in higher scores in schools that did not offer preschool.

These results of this study are not unique. Bernard (2009) found similar results in a study where multiple years of MAP data were used. The study included MAP data from 2005-06, 2006-07, and 2007-08 of schools with less than 500 students. Bernard (2009) concluded, "the presence or absence of a preschool has little or no impact on the number of children scoring at the advanced or proficient levels in the content areas of communication arts and math" (p. 112).

The Bernard study is indicative of the same demographic identified in this study used by targeting the MARE school districts for multiple years. Bernard (2009) found "a larger percentage of students in schools without a preschool scored higher in communication arts for the 2005-2006 testing session than the percentage of students that attended schools where a preschool was present" (p. 110). Although the specific year cited in Bernard's example represents only one testing year out of the total three years of

the study, similar results were identified in this study which included three years of data: 2010, 2011 and 2012.

Based on the survey data, administrator participants believed that preschool attributed to student achievement in the short term and over time; however, these data only agree with the participants 25% of the time. Furthermore, participants believe that preschool participation can be attributed to increased student achievement in later grades, including fourth and eighth grades in both communication arts and math. It is worth noting the participant attitudes regarding the attribution rates went down in grade eight in both content areas.

Although the survey results and MAP data are conflicting in three of the four age groups and content areas, there is agreement representing 25% of the grade levels and content areas identified in this study. Additionally, other factors should be considered. The availability of excellent teachers, resources, strong administrative leadership, professional development, technology, parent involvement, transportation, and facilities have a large impact on the quality of preschool programs.

Implications for Practice

The implications for this study are numerous. There is a broad push to expand preschool at the state level in Dr. Nicastro's *Top 10 by 20* campaign; at the national level, in President Obama's discussion of universal preschool; and the international level (Change.gov, 2009; Maxwell, 2012; MODESE, 2010a). However, at this time, there is funding for preschool in the 2014 budget (Office of Management and Budget, 2014). Most of this funding is a part of the 75 million dollars in President Obama's budget and

includes competitive grants (Office of Management and Budget, 2014). Because the grants are competitive, every school will not receive additional funding for preschool.

Historical longitudinal studies have been conducted and followed up for years, such as those detailed in the review of literature in Chapter Two, including CPC, High Scope/Perry Preschool Project, and Carolina Abecedarian Study (Lee, 2003; Ou & Reynolds, 2004; Promising, 2010). Although the goals of the programs have varied, all of these historical longitudinal studies have indicated positive results from preschool participation. Some have been as a cost-benefit to society; others have been in school readiness; while others have been identified as a tool for increased student achievement demonstrated by either reduced referrals to special education, improved early learning, or other evidence of increased student achievement (Lee, 2003; Ou & Reynolds, 2004; Promising, 2010).

The implication for educators today is to determine the goal of preschool, and then define the success or failure, thereof. If the goal is to prepare students for school, preschool can accomplish this goal. If the goal of preschool is to be used as a tool to increase student achievement in communication arts and math into the middle level grades and beyond, more research must be done to determine preschool as an accurate tool for this goal. Criteria and components of the preschool programs must be intensely documented so a determination can be made about the effectiveness of preschool on long-term student achievement.

Preschool cannot be the answer for all of the shortfalls in education. Nor can preschool participation be solely attributed to outstanding academic performance as a young adult. Preschool can serve a valid, and much needed purpose. Preschool can level

the playing field for disadvantaged students, serving as the great equalizer for students who have not had the benefit of early learning, so they do not get left behind.

At the same time, preschool can also serve in providing a great opportunity for students who are prepared and ready to expand their minds to absorb all education has to offer. College and career readiness does not begin in high school. It begins the day students step on campus. A love of learning can be instilled in a preschool classroom full of wonder and opportunity. To create this environment, teachers need training, tools, and technology. Students who come to preschool now, and in the years to come, will work in jobs that have not been invented yet. Educators must equip young students with skills to work collectively, constructively, and in a way that teaches them to solve problems.

Recommendations for Further Study

Education requires data to inform decisions. It is not what one feels, but what one knows, that should drive policies and shape programs. The difference between the results of the MAP data and survey results are a prime opportunity for further study to identify why educators continue to believe preschool is effective as tool for long-term student achievement when data indicated three times out of four that it is not. For this reason, additional study is not only warranted, but necessary.

A further recommendation from any follow-up study from this research would be to use more than three years of data. While three years is a good base, more time would allow a stronger basis to substantiate the data and draw definitive conclusions. Additionally, more time would provide a greater validity to the statistical analyses. Quantitative MAP data is available for a minimum of 10 years. A study utilizing several years would be beneficial to make a conclusive determination.

A follow-up study of the entire state of Missouri should be conducted comparing student achievement of schools that offer preschool and student achievement of schools that do not offer preschool. This would be very time consuming to evaluate and treat the data, but the results would serve the educational community well to provide a more informed platform for discussion on the effectiveness of preschool as a tool to improve student achievement long-term. Then, Missouri's results could be used to inform a national study on the topic.

A second recommendation would be to conduct a cohort study of approximately three schools from different areas in the state with similar demographics in which one cohort of students is tracked from preschool through eighth grade to identify specific student achievement. Criteria from each cohort, such as curriculum, teacher experience, teacher education level, and technology are just a few areas that could be tracked. These criteria could be used in a correlational study to determine which criteria have a correlation to improved student outcomes. Tracking the criteria in all schools would afford greater validity. Such a study would be more difficult to conduct because specific student information would need to be accessed; however, the resultant data would be very valuable to the educational community.

A third recommendation would be to conduct a study utilizing the MODESE's Exemplary Preschool Program winners. The study could follow the students in the Exemplary Preschool Programs to identify student performance. A review of student performance in those recipient elementary schools could provide data to perform a descriptive study about the components of those award-winning programs as well as long-term, sustained student achievement. Teacher characteristics, such as experience

level, education level, professional development, and technology available as well as information regarding which teacher preparation program the teacher graduated from would provide additional information to identify causal data and ensure accurate comparisons are made. Additionally, data on the components of these programs and curriculum used in the programs would provide valuable information that could be replicated to improve preschool effectiveness across the state.

Summary

Further study on the topic of preschools is needed to inform policy and assist administrators in making informed decisions with accurate data in regard to utilizing preschool as an appropriate strategy to improve student achievement. Change is not new to education; however, at this time in history, education is facing an unprecedented reduction in revenue. Additionally, education faces pressure to do more with less, while those who oppose public education want to use public revenue to provide an alternative to public education.

With so much competition for revenue inside and outside of education, education leaders must ensure that funds are used on programs that will result in positive gains for students. Past research indicates preschool as a tool to improve school readiness and has better-than-average results as a tool to improve student achievement in the very early grades (Allen, 2009; Rose, 2010). Beyond this, more research is necessary for schools to make decisions about how to most efficiently utilize limited financial resources to make the largest impact on student achievement. Is there another tool that can provide more data to improve student achievement long-term? Only further research can provide this answer.

Appendix A

Survey

1. Does your district have a preschool program?

   A. Yes

   B. No

2. Is your preschool program federally funded?

   A. Yes

   B. No

3. What is the free and reduced rate of the district?

   _____

4. How many years has your district operated a preschool?

   A. Less than 1

   B. 1-5

   C. 6-10

   D. 11-15

   E. More than 15

5. Please select the components that are a part of your preschool program (select all that apply).

   _____ Half-Day

   _____ Full-Day

   _____ Parents must pay for preschool services

   _____ Certified teachers

   _____ District-employed teachers

   _____ Professional Development for teachers

6. Which curriculum model does your preschool program use?

A. High Scope

B. Creative Curriculum

C. Project Construct

D. Emerging Language & Literacy Curriculum

E. Other-Please list_____

7. What percentage of mobility rates does your preschool experience for the same cohort from kindergarten through grade eight?

A. Under 20%

B. 20-30%

C. 30-40%

D. 40-50%

E. 50-60%

F. over 60%

8. What percentage of entering kindergarteners attended district preschool?

A. Less than 10%

B. 10-30%

C. 30-50%

D. 50-70%

E. Over 70%

9. To what degree do you believe preschool participation is an indicator of long-term student achievement?

A. Very high indicator

B. Somewhat of a high indicator

C. No opinion

D. Somewhat of a low indicator

E. Very low indicator

10. To what degree do you believe preschool participation increases the likelihood of early (K-3) student achievement in communication arts and math?

A. Very likely

B. Somewhat likely

C. No opinion

D. Somewhat unlikely

E. Very unlikely

11. To what degree do you believe that student achievement in communication arts and math in grade four can be attributed to preschool participation?

A. Very high attribution

B. Somewhat of a high attribution

C. No opinion

D. Somewhat of a low attribution

E. Very low attribution

12. To what degree can student achievement in communication arts and math in grade eight be attributed to preschool participation?

A. Very high attribution

B. Somewhat of a high attribution

C. No opinion

D. Somewhat of a low attribution

E. Very low attribution

13. How likely is it that preschool provides a cost benefit to society?

A. Very likely

B. Somewhat likely

C. No opinion

D. Somewhat unlikely

E. Very unlikely

14. To what degree do you agree or disagree with this statement: Preschool participation has a positive short-term effect on student achievement.

A. Very much agree

B. Somewhat agree

C. No opinion

D. Somewhat disagree

E. Very much disagree

15. To what degree would you agree or disagree with this statement: Preschool participation has a positive impact on long-term student achievement.

A. Very much agree

B. Somewhat agree

C. No opinion

D. Somewhat disagree

E. Very much disagree

16. To what degree do you believe preschool is a valuable mechanism for increasing student achievement over time?

A. Very much agree

B. Somewhat agree

C. No opinion

D. Somewhat disagree

E. Very much disagree

17. As a school administrator, how likely are you to recommend the introduction or expansion of district-provided preschool as a tool to improve student achievement?

A. Very likely

B. Somewhat likely

C. No opinion

D. Somewhat unlikely

E. Very unlikely

18. If reductions were required in your district, how likely are you to reduce or eliminate preschool?

A. Very likely

B. Somewhat likely

C. No opinion

D. Somewhat unlikely

E. Very unlikely

Appendix B

IRB Disposition Letter

LINDENWOOD

DATE: September 9, 2013

TO: Amy Britt

FROM: Lindenwood University Institutional Review Board

STUDY TITLE: [4902373-1] The Long-Tem Impact of Preschool Education on Student Achievement

IRB REFERENCE #:

SUBMISSION TYPE: New Project

ACTION: APPROVED
APPROVAL DATE: September 9, 2013

EXPIRATION DATE: September 9, 2014

REVIEW TYPE: Expedited Review

Thank you for your submission of New Project materials for this research project. Lindenwood University Institutional Review Board has APPROVED your submission. This approval is based on an appropriate risk/benefit ratio and a study design wherein the risks have been minimized. All research must be conducted in accordance with this approved submission.

This submission has received Expedited Review based on the applicable federal regulation.

Please remember that informed consent is a process beginning with a description of the study and insurance of participant understanding followed by a signed consent form. Informed consent must continue throughout the study via a dialogue between the researcher and research participant. Federal regulations require each participant receive a copy of the signed consent document.

Please note that any revision to previously approved materials must be approved by this office prior to initiation. Please use the appropriate revision forms for this procedure.

All SERIOUS and UNEXPECTED adverse events must be reported to this office. Please us the appropriate adverse events forms for this procedure. All FDA and sponsor reporting requirements should also be followed.

All NON-COMPLIANCE issues or COMPLAINTS regarding this project must be reported promptly to the IRB.

This project has been determined to be a Minimal Risk project. Based on the risks, this project requires continuing review by this committee on an annual basis. Please use the completion/amendment form for this procedure. Your documentation for continuing review must be received with sufficient time for review and continued approval before the expiration date of September 9, 2014.

Please note that all research records must be retained for a minimum of three years.

If you have any questions, please contact Tameka Tammy Moore at (618) 616-xxxx or tmoore@lindenwood.edu. Please include your study title and reference number in all correspondence with this office.

If you have any questions, please send them to IRB@lindenwood.edu. Please include our project title and reference number in all correspondence with this committee.

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within Lindenwood University Institutional Review Board's records

Appendix C

Recruitment letter

September 10, 2013

Dear School Administrator,

I am Amy Britt, a doctoral candidate at Lindenwood University. I am conducting a study on the long-term effects of preschool participation on student achievement. In order to effectively investigate the topic, your input is needed. If you agree to participate, please click on the link below to take the survey. The survey should take approximately 15 minutes to complete. There is little risk to you as a participant. All responses will be kept confidential and no identifying information from the survey results will be kept. Upon the completion of the study, all data will be deleted.

Once the study is completed, it will be published on the Lindenwood University website or you may email me at abritt@bakersfield.k12.mo.us. The completion date for the study is anticipated to be December, 2013.

If you choose to participate, please click here to take the survey

https://www.surveymonkey.com/s/XM8K6V5

Thank you for participating in the study by completing this survey!

Sincerely,

Amy Britt

Appendix D

Informed Consent

LINDENWOOD

INFORMED CONSENT FOR PARTICIPATION IN RESEARCH ACTIVITIES

"The Long-Term Impact of Preschool Education on Student Achievement"

Principal Investigator: Amy Britt

Telephone: 417-XXX-XXXX E-mail: abritt@bakersfield.k12.mo.us

Participant _____ Contact Info _____

1. You are invited to participate in a research study conducted by Amy Britt under the guidance of Dr. Sherry DeVore. The purpose of this research is to determine if students who attend schools that offer preschool demonstrate increased student achievement compared to students who attend schools that do not offer preschool.

2. a.) Your participation will involve:

Completing a short survey

b.) The amount of time involved in your participation will be approximately 20 minutes. Approximately 500 participants will be involved in this research.

3. There are no anticipated risks associated with this research.

4. There are no direct benefits for you participating in this study. However, your participation will contribute to the knowledge about the effectiveness of preschool as a tool to improve student achievement.

5. Your participation is voluntary, and you may choose not to participate in this research study or to withdraw your consent at any time. You may choose not to answer any questions that you do not want to answer. You will NOT be penalized in any way should you choose not to participate or to withdraw.

6. We will do everything we can to protect your privacy. As part of this effort, your identity will not be revealed in any publication or presentation that may result from this

study and the information collected will remain in the possession of the investigator in a safe location and will be destroyed upon completion of the study.

7. If you have any questions or concerns regarding this study, or if any problems arise, you may call the primary investigator, Amy Britt (417) XXX-XXXX or the Supervising Faculty, Dr. Sherry DeVore (417) XXX-XXXX. You may also ask questions of or state concerns regarding your participation to the Lindenwood Institutional Review Board (IRB) through contacting Dr. Jann Weitzel, Vice President for Academic Affairs, at 636-XXX-XXXX.

I have read this consent form and have been given the opportunity to ask questions. I may retain a copy of this consent form for my records. My consent to participate in the research described above is acknowledged by completing the survey. The survey may be accessed by copying and pasting the link below into your web browser.

https://www.surveymonkey.com/s/XM8K6V5

References

Allen, C. R. (2009). *Effect of early childhood education programs on school readiness*. Lindenwood University Dissertation Abstract: 109; ATT 3390644.

Arteaga, I., Ou, S., Reynolds, A., Temple, J., & White, B. (2011). School-based early childhood education and age 28 well-being: effects by timing, dosage and sub groups. *Institute of Child Development, 1-9*. University of Minnesota. Retrieved from http://www.cehd.umn.edu/icd/research/cls/docs/Science2011accepted.pdf.

Artherton, J. S. (2010). Piaget's developmental theory: Piaget's key ideas. Retrieved from http://www.learningandteaching.info/learning/piaget.htm#key%20Ideas

Barnett, S. (2008). Preschool education and its lasting effects: Research and policy implication. *National Institute for Early Education Research*, 1-35. Rutgers, The State University of New Jersey. Retrieved from http://greatlakescenter.org/docs/policy_Briefs/Barnett_EarlyEd.pdf

Barnett, S., & Ackerman, D. (2006). Costs, benefits, and long-term effects of early care and education programs: Recommendations and cautions for community developers. *Journal of the Community Development Society, 37*(2), 86-100.

Barnett, S., & Belfield, C. (2006). Early childhood development and social mobility. *The Future of Children, 16*(2), 73-98. JSTOR Education Database. Retrieved from http://www.jstor.org/pss/3844792

Barnett, S., Brome, K., & Shore, R. (2004). The universal vs. targeted debate: Should the United States have preschool for all? *Preschool Policy Matters,* Issue 6, April, 2004. National Institute for Early Education Research. 1-16. Rutgers, The State University of New Jersey.

Barnett, S., Frede, E., Figueras, A., & Jung, K. (2009). The APPLES Blossom: Abbott preschool program longitudinal effects study (APPLES). Interim Report (1-30). National Institute for Early Education. Graduate School of Education, Rutgers, State University of New Jersey.

Barnett, W., Belfield, C., Montie, J., Nores, M., Schweinhart, L., & Xiang, Z. (2005). The High/Scope Perry preschool study through age 40: Summary, conclusions, and frequently asked questions. *High/Scope Educational Research Foundation.* Ypsilanti, MI: High/Scope Press.

Barnett, W., Carolan, M., Fitzgerald, J., & Squires, J. (2012). *The state of preschool 2012: State preschool yearbook*. New Brunswick, NJ: National Institute for Early Education Research. Rutgers, State University of New Jersey.

Bartik, T. (2006). *The economic development benefits of universal preschool education compared to traditional economic development programs.* W. Upjohn Institute for Employment Research: (May, 2006). Kalamazoo, Michigan.

Bartik, T. (2012, January 24). *Re: New long-term estimates of the effects of the Abecedarian program* [Web log message]. Retrieved from http://investinginkids.net/2012/01/24/new-long-term-estimates-of-the-effects-of-the-abecedarian-program/

Bernard, R. (2009). *A study of student achievement in Missouri school districts that maintain a preschool program*. (Doctoral Dissertation). Retrieved from Lindenwood University PQDT Open database. 3372317.

Brown, C. (2009). Being accountable for one's own governing: A case study of early educators responding to standards-based early childhood education reform.

Contemporary Issues in Early Childhood, *10(1),* 3-23. Retrieved from http://dx.doi.org/10.2304/ciec.2009.10.1.3

Burke, L. (2009). Does universal preschool improve learning? Lessons from Georgia and Oklahoma. *Backgrounder*, 2272, 1-12. Retrieved from http://www.heritage.org/Research/Education/bg2272.cfm

Burke, L. (2010). More government preschool: An expensive and unnecessary middle-class subsidy. *Backgrounder*, 2378, 1-12. Retrieved from http://www.heritage.org/Research/Education/bg2378.cfm

Change.gov. (January, 2009). *Agenda. Education. The Obama-Biden plan*. [web blog post]. Retrieved from http://change.gov/agenda/education_agenda/

Currie, J., & Thomas, D. (1995). Does Head Start make a difference? *The American Economic Review*, *85*, 341-364.

Domitrovich, C., & Greenberg, M. (2010*). Participation in preschool program substantial effect on student achievement.* Retrieved from Education Full Text Database http://www.hhdev/psu.edu/news/2010/1_19_10_preschool.html

Education Policy Brief. (2009, May). Kindergarten readiness data: Improving children's success in school. *Children Now*. Retrieved from http://childrennow.org

Fincher, B. (2008). Study: PreK benefits may not be universal. *Daily Home*. Retrieved from http://www.dailyhome.com/news/2008/dh-localnews-0419-bfincher8d18v0236.html

Fitzpatrick, M. D. (2008). Starting school at four: The effect of universal prekindergarten on children's academic achievement. *The B. Journal of Economic Analysis &*

Policy Advances. Stanford University Institute for Economic Policy and Research, *8(1),* 1-38. Retrieved from http://www.bepres.com/bejeap/vol8/iss1/art46

Fraenkel, J., Wallen, N., & Hyun, H. (2012). *How to design and evaluate research in education (8th ed.)* McGraw-Hill.

Frean, A. (2008). New under-5s national curriculum may 'make children go backwards. *The Times*. Retrieved from http://www.timesonline.co.uk/tol/life_and_style/education/article3378783.ece?print=yes&randnum=1203691135160

Herman, J., Post, S., & O'Halloran, S. (2013). *The United States is far behind other countries on PreK*. Center for American Progress. May, 2013.

Iowa School Boards Foundation, (2007, March). *A literature review: The influence of preschool attendance*. Information Report. *1(3),* 1-7. Retrieved from http://www.ia-sb.org

Kleinsmith, S. (2009). Public education must abandon programs it can't afford [Letter to the editor]. *Springfield Newsleader.* November, 2009. Retrieved from http://www.News-Leader.com

Kumar, Dr. C. R. (2008). *Research methodology*. New Delhi, India: S. B. Nangia for APH Publishing Corporation.

Lazarus, P., & Ortega, P. (2007). Universal prekindergarten in conjunction with universal screenings: An antidote to grade retention. *Journal of Educational Research and Policy Studies,7(1),* 54-75.

Learning-Theories.com. (2010). Social development theory (Vygotsky). Retrieved from http://www.learning-theories.com/vygotskys-social-learning-theory.html

Lee, J. (2003). The benefits of preschool for high school and beyond. *Early Childhood Family Education*. ERIC Full Text Database. Retrieved from http://www.ccsso.org

Ludwig, J., & Phillips, D. (2008). Long-term effects of Head Start on low-income children. *N.Y. Academic Science*: 1136, 257-268. New York Academy of Sciences. Retrieved from http://home.uchicago.edu/~lludwigj/papers/nyas-LudwigPhillips-HeadStart_2008.pdf

Marcon, R. (2002). Moving up the grades: Relationship between preschool model and later school success. *Early Childhood Research & Practice*, *4(1),* Spring, 2002. Retrieved from http://ecrp.uluc.edu/v4n1/macron.htm

Maxwell, L. (2012). Study finds U.S. trailing in preschool enrollment. *Education Week*, September, 2012. Retrieved from http://www.edweek.org/ew/articlea/2012/09/11/04oecd.h32.html

Melhuish, E., Lylva, K., Sammons, P., Siraj-Blatchford, I., Taggart, B., Phan, M., & Malin, A. (2008). The early years: Preschool influences on mathematics achievement. *Education Forum*. Science. 321, August, 2008. Retrieved from http://dn.redwoods.edu/coursenotes/haley/math15/articles.Melhuish.pdf

Missouri Association of Rural Education. (2014). Retrieved from http://www.moare.com

Missouri Council of School Administrators. (2014). *Continuing legislative concerns for school administrators*. Retrieved from http://www.mcsa.org/msapac/index.htm

Missouri Department of Elementary and Secondary Education. (2009). *Strategic plan*. Retrieved from http://www.dese.mo.gov/

Missouri Department of Elementary and Secondary Education. (2010a). Division of *school improvement and accountability, early childhood education. School improvement manual.* Retrieved from http://www.dese.mo.gov/divimprove/fedprog/earlychild/Approved_Curriculums.htm

Missouri Department of Elementary and Secondary Education. (2010b). *School improvement program.* Webinar. Retrieved from http://www.dese.mo.gov/documents/MSIP5Webinar11-08-10.pdf

Missouri Department of Elementary and Secondary Education. (2010c). *What's happening in early learning in Missouri.* Webinar. Retrieved from http://www.dese.mo.gov/documents/WhatsHappeninginEarlyLearningWebinar11-19-10.pdf

Missouri Department of Elementary and Secondary Education. (2011a). *End-of-Course Assessments*. Retrieved from http://www.dese.mo.gov/divimprove/assess/eoc.html

Missouri Department of Elementary and Secondary Education. (2011b). *MAP*. Retrieved from http://www.dese.mo.gov/divimprove/assess/

Missouri Department of Elementary and Secondary Education. (2011c,). *No Child Left Behind (NCLB)*. Retrieved from http://www.dese.mo.gov/divimprove/nclb/

Missouri Department of Elementary and Secondary Education. (2014). *Top 10 by 20*. Retrieved from http://dese.mo.gov/top10by20/goals.html.

Missouri School Boards Association. (2009). *Levy and budget planning*. Notes from online meeting. (2009, September).

Missouri School Boards Association. (2010). *Budget outlook and ARRA funds*. Notes from online meeting with Linda Luebring. (2010, November).

Missouri School Boards Association. (2014). *Critical alert, legislative update*. Retrieved from http://www.msbanet.org

Obama, B. (2014). *State of the union address. January, 2014.* Retrieved from http://politi.co/Mse3fm

Office of Management and Budget. (2014). *Educating a competitive workforce*. Retrieved from http://www.whitehouse.gov/omb/budget/factsheet/educating-a-competitive-workforce

Ou, S., & Reynolds, A. J. (2004). Preschool education and school completion. *Encyclopedia on Early Childhood Development*, (February, 2004). Retrieved from http://www.enfant_encyclopedia.com/Pages/PDF/Ou-ReynoldsANGxp.pdf

Peisner-Feinberg, E., & Schaaf, J. (2008). *Evaluation of the North Carolina more at four PreKindergarten programs: Performance and progress in the seventh year (2007-2008). Executive Summary*. FPG Child Development Institute. Retrieved from http://www.fpg.unc.edu/~mafeval/fdfs/year_7_executive_summary.pdf

Piaget, J. (2001). *The psychology of intelligence*. New York, New York: Routledge.

Promising Practices Networks on Children, Families, and Communities. (2010). *Programs that work*. Retrieved from http://promising practices.net/program.asp?programid=128

Reynolds, A. (2005). Promoting children's success. *Newsletter of the Chicago Longitudinal Study, 2.* Retrieved from http://www.waisman.wisc.edcu/cls/

Reynolds, A. J. (2007). *Cost-effective early childhood development programs from preschool to third grade*. Paper presented at the November, 2007, Growth and Justice Conference. St. Paul, MI.

Rocha, E. (2006). The role of 21st century learning: A look at California's preschool for all initiative. *Center for American Progress*. Retrieved from http://www.american-progress.org

Rose, M. (2010). *Preschool connectedness: The impact of attending a school district affiliated prekindergarten program on student success in the initial elementary years*. (Doctoral Dissertation). Lindenwood University PQDT Open database. (106; AAT 3389733).

Schaefer, R. T., & Lamm, R. P. (1994). *Sociology: A brief introduction.* New York, New York: McGraw-Hill, Incorporated.

Schweinhart, L., & Fulcher-Dawson, R. (2006). *Investing in Michigan's future: Meeting the early childhood challenge.* Education Policy Center at Michigan State University.

Snell, L. (2006). *The case against universal preschool in California.* Retrieved from http://reason.org/news/show/127405.html

Sutherland, K. (2009). *The impact of early childhood programs on student achievement.* (Doctoral Dissertation). Lindenwood University. UMI No. 3372343.

U.S. Department of Education, Institution of Educational Sciences National Center on Educational Research. (2008a). *Effects of preschool curriculum programs on school readiness: Report from the preschool curriculum evaluation research*

initiative. (ED Publication No. ED-01-CO-0039/0005). Retrieved from http://ncer.ed.gov

U.S. Department of Education, Institution of Educational Sciences National Center on Educational Research. (2008b). *Reading first impact study: Interim report*. (NCEE Report No. 2008-4016). Retrieved from http://ncee.ed.gov

U.S. Department of Education. (2014). *Early learning challenge grants*. Retrieved from http://www2.ed.gov/programs/racetothetop-earlylearningchallenge/awards.html

Vygotsky, L. S. (1978). *Mind and society: The development of higher mental processes.* Cambridge, MA: Harvard University Press.

Vygotsky, L. S. (1951). *Educational psychology*. Boca Raton, FL: CRC Press, LLC.

Weinstein, A. (2009). *Obama on early childhood education*. Retrieved from http://www.education.com/print/Obama_Early_Childhood_Education/

Vita

Amy Britt received a Bachelor's degree in Education with a major in history and a minor in German from Missouri State University in 2000. In 2004, Amy received a Master's degree in Educational Administration from William Woods University. By 2008, Amy achieved a Specialist degree in Educational Leadership from Missouri State University. Amy served as a junior high and high school teacher, elementary principal, and district curriculum director for the Gainesville R-V School District until 2011. From 2011 to present, Amy serves as the superintendent at Bakersfield R-IV School District.